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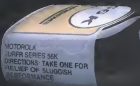
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BC EDITION • NOVEMBER '97

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## COMING UP IN BC EDITION

### DECEMBER 1997

Online jobs  
Small ways of paying software  
the show • A computer for Christmas  
Art Deadline: Tue., Oct. 18  
Distribution: Fri., Nov. 14

### JANUARY 1998

Design personal computer technology  
New Net 1: installing your first web site  
your company • Performance notebook  
Art Deadline: Tue., Nov. 23  
Distribution: Fri., Dec. 12

### FEBRUARY 1998

New network 3D • Take 200 • 3D: another  
Personal the software • 3D for  
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Art Deadline: Mon., Dec. 29  
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# Affordable video editing and much more!



Dear Grandma and Grandma,

Thanks so much for the best Christmas present ever! As you can see from the video cassette I'm sending you, I've already made a cool home movie with the new Matrox Rainbow Runner Studio. It's the best thing we ever got for our PC. Besides the movie, I've video-conferenced over the Internet with my pen pal in Paris, designed some Thanksgiving cards with my pictures on it (this is one of them) and grabbed some TV clips from the web for my school report on the Prime Minister. What's great is that the Rainbow Runner Studio is so easy to install and use - even Dad figured it out! It also comes with free software for easy video editing and more.

Gettin' go - I'm starting to make my first "real" movie on the street with some friends. Johnny's dog is gonna be in it too!

Love,

Mimi

P.S. Did you know Matrox has a new 3D gaming card called "Matrox Wild"? For only \$1499, my birthday is only 3 months away!



#### Matrox Rainbow Runner Studio

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## WHAT'S NEW

## Continued from page 12

nation. Beforey Johnson chaired the Information Highway Advisory Council, which advised its final report in September, *Powering Canada for a Digital World*.

Johnson, a professor at McGill University's Centre for NewMedia, Ethics and Law in Montreal, will advise the minister and the government in areas such as electronic commerce, the 3000 problems, and other information highway related matters, federal officials said. —Guenther Becker

**Sprint Canada launches Internet service** • TORONTO, Ont. (AP)—Saying they hope to become Canada's largest Internet service provider (ISP), officials of Sprint Canada have launched an Internet service called The Most Deluxe Sprint Canada, a unit of CableTel International Inc., will emphasize ease of use and the service's 24-hour pricing plan as selling points.

The Most Deluxe is being launched immediately in 17 cities: Toronto, Montreal, London, Edmonton, St. Catharines, Hamilton, Oakville, Mississauga, Ottawa, Brampton, Quebec City, Calgary, Edmonton, Vancouver, Victoria, Winnipeg, and Halifax. David Eagan, Sprint Canada's executive vice-president of marketing, sales and service, said at a press conference Monday that the company plans to extend service to more locations soon.

Sprint will charge a flat rate of \$20.95 per month for unlimited Internet access time, also offering that rate to \$20.95 for those who also use the company's long-distance telephone service.

Taking advantage of its presence in the long distance market, the company will also offer customers that use both services a single monthly bill.

The launch "reflects our plan to become a national full-service telecommunications company," said Jeff Ross, chairman of Sprint Canada, during the press conference.

Putting the emphasis on ease of use, Sprint Canada is providing customized Internet software that offers simple access to various Internet services such as a search engine and to online help. The software is available in both French and English, said Rodney Harris, Sprint Canada's president and chief operating officer.

Sprint is also providing 24-hour-a-day, 1-800-department technical support, in English and French.

Initially The Most Deluxe access software is only available to Windows 95. Eagan said other platforms will be supported soon. The software requires 30 MB of hard disk space, at least a 16-MHz processor, and a CD-ROM drive or 3.5-inch floppy drive. —Guenther Becker

## Canadian Tire launches electronic flyer



TORONTO, Ont. (AP)—Canadian Tire Corp. Ltd. which operates auto-parts and hardware stores across the country, has launched a weekly e-mailed sales flyer.

Through the Canadian Tire World Wide Web site, customers can sign up to have the weekly flyer sent by email. They can also view the product categories that feature items, so they get information only on their needs.

**Canadian Tire**  
Web site: <http://www.canadiantire.ca>

**HP Internet e-mailbox, e-mailbox** • NEW— Hewlett-Packard has rolled out the HP SureStore CD-ROM Mail, a product billed as the first to combine the software creation capabilities of a traditional floppy disk drive with CD-ROM's ability to handle large text files, digital photos, and audio.

Although conventional CD-Rs cannot well turn

ed in applications, the software and music file formats CD-Rs require a complex, customizing application, says Percy Kelly. HP's product models are simple.

Meanwhile, the purchase price of CD-R drives has now fallen to about US\$400 (about US\$1,000 when the technology was first introduced), he added.



## WHAT'S NEW

Older CD-ROM products will get special attention: a technology that permits printing to take place only in a specified sequence on the disk, he said.

But HP's new CD-Writer Plus introduces "new power" through random access technology. It's a result, a new era where a file is the entire disk instead of needing to wipe the whole disk.

Even before creating a new file, says Ralph. "This represents a new paradigm for what users do as simple as moving on a floppy disk."

Using HP's CD-ROM Plus, users can create a new CD-ROM. Plus, users can use files to disk, in step and step from Windows Explorer just as though they were using a floppy.

And because of the higher volume capacity of

CD-ROM, users will find it possible to store multimedia and digital photo files, as well as large software programs, directly on the PC than the hard drive.

Controlled with Philips, CD-Writer Plus is also compatible with IBM CD-ROM drives, as well as with conventional CD and CD-ROM drives, according to Ralph.

HP is offering internal and external versions of CD-Writer Plus. The internal drive starts at \$299.95, compared to the external drive starting at \$399.95. Both drives ship with the HP's software, the digital photo software.

Ralph added that the HP technology is still new. He said he also said it's the first time at a low enough price to appeal to users. CD-ROM (high-end) and random access (low-end) But ultimately CD-ROM drives will begin to appear in PCs, and users there, then users to CD-ROM drives can also be used by CD-ROM drives, he said. The new PCs with random access will be the first time, he predicted, he predicted.

**Childhood public housing is getting saved**  
Oakland, Calif. (PR)—Future public housing projects here will have to be designed by computer technology including, randomly to each unit, under a policy established by Oakland Mayor Minnie M. Davis and the city council. The goal is to help welfare and low-income residents find rental jobs in the city.

"We believe Oakland is the first city in the nation to adopt such a policy," Davis said. "We think it's a major step in making it easier to find a job for those who need it."

Davis said as an example, a single mother on welfare with small children at home and no income to support them. "That's why welfare is a major step in making it easier to find a job for those who need it."

Davis said Oakland officials already are working to partnership with IBM, community organizations and local business to develop a pilot project for the city's first of Oakland's new random housing development. Each unit will have an IBM Network Station attached to a PC screen through a local area network (LAN).

Additional software will be available to each resident. Some computer skills such as word processing, spreadsheets, database management and accessing the Internet.

Some training will be tailored to specific jobs offered by local businesses, Davis said. And additional software added to improving basic reading and math skills also will be provided, along with learning programs for children.

City Council member Ignacio De la Fuente said each housing facility will include a training center staffed with trained mentors to work closely with residents. Local businesses will make job openings to residents who successfully complete a job training curriculum, he said.

"This project and other cooperative ventures in the future will not only help Oakland citizens survive the devastating impact that welfare reform is having on our community, it will provide businesses with well-trained job applicants and children who won't fall behind their peers in school because they don't have access to a computer," Davis said.

What's New is compiled by Jeff Chang, Keith Schimpf, Robert, David Zink, Gabe Brown and Megan Johnson.

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3.3GB	ST33000	10 Sec	10MB	7200	ULTRA SCSI 3000	1300
5.0GB	ST45000	10 Sec	10MB	7500	ULTRA SCSI 3000	1300
6.6GB	ST55000	10 Sec	10MB	7800	ULTRA SCSI 3000	1300
10.0GB	ST75000	10 Sec	10MB	8500	ULTRA SCSI 3000	1300
13.3GB	ST85000	10 Sec	10MB	8800	ULTRA SCSI 3000	1300
16.6GB	ST95000	10 Sec	10MB	9100	ULTRA SCSI 3000	1300
20.0GB	ST115000	10 Sec	10MB	9400	ULTRA SCSI 3000	1300
26.6GB	ST150000	10 Sec	10MB	10000	ULTRA SCSI 3000	1300
33.3GB	ST180000	10 Sec	10MB	10500	ULTRA SCSI 3000	1300
40.0GB	ST210000	10 Sec	10MB	11000	ULTRA SCSI 3000	1300
46.6GB	ST240000	10 Sec	10MB	11500	ULTRA SCSI 3000	1300
53.3GB	ST270000	10 Sec	10MB	12000	ULTRA SCSI 3000	1300
60.0GB	ST300000	10 Sec	10MB	12500	ULTRA SCSI 3000	1300
66.6GB	ST330000	10 Sec	10MB	13000	ULTRA SCSI 3000	1300
73.3GB	ST360000	10 Sec	10MB	13500	ULTRA SCSI 3000	1300
80.0GB	ST390000	10 Sec	10MB	14000	ULTRA SCSI 3000	1300
86.6GB	ST420000	10 Sec	10MB	14500	ULTRA SCSI 3000	1300
93.3GB	ST450000	10 Sec	10MB	15000	ULTRA SCSI 3000	1300
100.0GB	ST480000	10 Sec	10MB	15500	ULTRA SCSI 3000	1300
106.6GB	ST510000	10 Sec	10MB	16000	ULTRA SCSI 3000	1300
113.3GB	ST540000	10 Sec	10MB	16500	ULTRA SCSI 3000	1300
120.0GB	ST570000	10 Sec	10MB	17000	ULTRA SCSI 3000	1300
126.6GB	ST600000	10 Sec	10MB	17500	ULTRA SCSI 3000	1300
133.3GB	ST630000	10 Sec	10MB	18000	ULTRA SCSI 3000	1300
140.0GB	ST660000	10 Sec	10MB	18500	ULTRA SCSI 3000	1300
146.6GB	ST690000	10 Sec	10MB	19000	ULTRA SCSI 3000	1300
153.3GB	ST720000	10 Sec	10MB	19500	ULTRA SCSI 3000	1300
160.0GB	ST750000	10 Sec	10MB	20000	ULTRA SCSI 3000	1300
166.6GB	ST780000	10 Sec	10MB	20500	ULTRA SCSI 3000	1300
173.3GB	ST810000	10 Sec	10MB	21000	ULTRA SCSI 3000	1300
180.0GB	ST840000	10 Sec	10MB	21500	ULTRA SCSI 3000	1300
186.6GB	ST870000	10 Sec	10MB	22000	ULTRA SCSI 3000	1300
193.3GB	ST900000	10 Sec	10MB	22500	ULTRA SCSI 3000	1300
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206.6GB	ST960000	10 Sec	10MB	23500	ULTRA SCSI 3000	1300
213.3GB	ST990000	10 Sec	10MB	24000	ULTRA SCSI 3000	1300
220.0GB	ST1020000	10 Sec	10MB	24500	ULTRA SCSI 3000	1300
226.6GB	ST1050000	10 Sec	10MB	25000	ULTRA SCSI 3000	1300
233.3GB	ST1080000	10 Sec	10MB	25500	ULTRA SCSI 3000	1300
240.0GB	ST1110000	10 Sec	10MB	26000	ULTRA SCSI 3000	1300
246.6GB	ST1140000	10 Sec	10MB	26500	ULTRA SCSI 3000	1300
253.3GB	ST1170000	10 Sec	10MB	27000	ULTRA SCSI 3000	1300
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306.6GB	ST1410000	10 Sec	10MB	31000	ULTRA SCSI 3000	1300
313.3GB	ST1440000	10 Sec	10MB	31500	ULTRA SCSI 3000	1300
320.0GB	ST1470000	10 Sec	10MB	32000	ULTRA SCSI 3000	1300
326.6GB	ST1500000	10 Sec	10MB	32500	ULTRA SCSI 3000	1300
333.3GB	ST1530000	10 Sec	10MB	33000	ULTRA SCSI 3000	1300
340.0GB	ST1560000	10 Sec	10MB	33500	ULTRA SCSI 3000	1300
346.6GB	ST1590000	10 Sec	10MB	34000	ULTRA SCSI 3000	1300
353.3GB	ST1620000	10 Sec	10MB	34500	ULTRA SCSI 3000	1300
360.0GB	ST1650000	10 Sec	10MB	35000	ULTRA SCSI 3000	1300
366.6GB	ST1680000	10 Sec	10MB	35500	ULTRA SCSI 3000	1300
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453.3GB	ST2070000	10 Sec	10MB	42000	ULTRA SCSI 3000	1300
460.0GB	ST2100000	10 Sec	10MB	42500	ULTRA SCSI 3000	1300
466.6GB	ST2130000	10 Sec	10MB	43000	ULTRA SCSI 3000	1300
473.3GB	ST2160000	10 Sec	10MB	43500	ULTRA SCSI 3000	1300
480.0GB	ST2190000	10 Sec	10MB	44000	ULTRA SCSI 3000	1300
486.6GB	ST2220000	10 Sec	10MB	44500	ULTRA SCSI 3000	1300
493.3GB	ST2250000	10 Sec	10MB	45000	ULTRA SCSI 3000	1300
500.0GB	ST2280000	10 Sec	10MB	45500	ULTRA SCSI 3000	1300
506.6GB	ST2310000	10 Sec	10MB	46000	ULTRA SCSI 3000	1300
513.3GB	ST2340000	10 Sec	10MB	46500	ULTRA SCSI 3000	1300
520.0GB	ST2370000	10 Sec	10MB	47000	ULTRA SCSI 3000	1300
526.6GB	ST2400000	10 Sec	10MB	47500	ULTRA SCSI 3000	1300
533.3GB	ST2430000	10 Sec	10MB	48000	ULTRA SCSI 3000	1300
540.0GB	ST2460000	10 Sec	10MB	48500	ULTRA SCSI 3000	1300
546.6GB	ST2490000	10 Sec	10MB	49000	ULTRA SCSI 3000	1300
553.3GB	ST2520000	10 Sec	10MB	49500	ULTRA SCSI 3000	1300
560.0GB	ST2550000	10 Sec	10MB	50000	ULTRA SCSI 3000	1300
566.6GB	ST2580000	10 Sec	10MB	50500	ULTRA SCSI 3000	1300
573.3GB	ST2610000	10 Sec	10MB	51000	ULTRA SCSI 3000	1300
580.0GB	ST2640000	10 Sec	10MB	51500	ULTRA SCSI 3000	1300
586.6GB	ST2670000	10 Sec	10MB	52000	ULTRA SCSI 3000	1300
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600.0GB	ST2730000	10 Sec	10MB	53000	ULTRA SCSI 3000	1300
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633.3GB	ST2880000	10 Sec	10MB	55500	ULTRA SCSI 3000	1300
640.0GB	ST2910000	10 Sec	10MB	56000	ULTRA SCSI 3000	1300
646.6GB	ST2940000	10 Sec	10MB	56500	ULTRA SCSI 3000	1300
653.3GB	ST2970000	10 Sec	10MB	57000	ULTRA SCSI 3000	1300
660.0GB	ST3000000	10 Sec	10MB	57500	ULTRA SCSI 3000	1300
666.6GB	ST3030000	10 Sec	10MB	58000	ULTRA SCSI 3000	1300
673.3GB	ST3060000	10 Sec	10MB	58500	ULTRA SCSI 3000	1300
680.0GB	ST3090000	10 Sec	10MB	59000	ULTRA SCSI 3000	1300
686.6GB	ST3120000	10 Sec	10MB	59500	ULTRA SCSI 3000	1300
693.3GB	ST3150000	10 Sec	10MB	60000	ULTRA SCSI 3000	1300
700.0GB	ST3180000	10 Sec	10MB	60500	ULTRA SCSI 3000	1300
706.6GB	ST3210000	10 Sec	10MB	61000	ULTRA SCSI 3000	1300
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720.0GB	ST3270000	10 Sec	10MB	62000	ULTRA SCSI 3000	1300
726.6GB	ST3300000	10 Sec	10MB	62500	ULTRA SCSI 3000	1300
733.3GB	ST3330000	10 Sec	10MB	63000	ULTRA SCSI 3000	1300
740.0GB	ST3360000	10 Sec	10MB	63500	ULTRA SCSI 3000	1300
746.6GB	ST3390000	10 Sec	10MB	64000	ULTRA SCSI 3000	1300
753.3GB	ST3420000	10 Sec	10MB	64500	ULTRA SCSI 3000	1300
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## ■ PROTECTING YOUR COMPUTER ASSETS

# Paranoid as you wanna be

## Protecting your computer assets

BY JEFF EVANS

Early one morning in 1985, someone threw a cement block through the window of my wife's computer typesetting company in Concord, Ont. The thief climbed in through the shattered window and stole our two most valuable computers: a Compaq portable PC and a new 286 PC with all the company's current typesetting production jobs on its hard drive. This incident almost put us out of business.

**W**e were not only victims of using computers and running our own company, but we were completely unprepared for this act of violence.

We had made every mistake in the book. We had no burglar alarm. Our office had no windows through which any passerby could see computers in use. Our insurance policy had such a high deductible that we weren't going to get any replacement computers from the insurer. The policy also had no "seizure-of-business" clause, so we had to pay our staff another set of our own pencils to increase all the work that went out the window on the 286's hard drive (because those girls had been busy tied up and put in a safe place).

There weren't much we could say in our own defense, except that it had never occurred to us that someone being would break into our place and steal from us. But...

Since then, thinking about protecting the computer hardware and software that is essential to making our living has existed under a kind of low-level background noise as we mull it. We're now always aware of the facts that could be caused to us in a heartbeat, and we try to minimize our

### vulnerability

In this article, I'll share my thoughts on safe computing, mainly from a small-office/home-office (SOHO) perspective, although many of these principles apply to large-scale computing environments as well. I won't deal with methods of protecting against computer viruses. Beyond noting that you yourself are up-to-date that checks on your computer as soon as you power it up the first day, and keep that virus checker running all the time that your computer is turned on.

### How much should I care?

A computer is just a machine. It probably doesn't make much sense to cancel your personal life insurance to take out insurance on your PC, if you only use it for playing games. You should start by making a risk assessment of your situation. In terms of how badly off would kinds of computer disasters such as theft or hard drive crashes could affect you personally or financially.

Is your computer essential to your education or your business? Who is legally responsible for it, or who owns it? How much time and money—real change to your lifestyle—are you willing to devote to lowering your margin of safety? If you are planning to start a business that will make use of a computer, include the costs of security, insurance, and system maintenance in your budget.

### Acts of God and Murphy's Law

Murphy's Law states, "If anything can go wrong, it will." The law's first corollary is, "...and at the most inconvenient time." This seems to apply with special force to computers.

The first rule is to remember that a computer's value is in its information base, and even if that lost base is a few disks, you still want to save the information. The most common first line of defense in protecting your computer assets is to always always always make backups of your computer data, and store them in a safe place.

A decade ago, other floppy disasters were used for making backups of small amounts of data, or tape drives were used to make backups of large amounts of information. These days, there is a host of new alternative media storage technologies on the market, including Zip, Jaz, and HighSpeed cartridge drives, 120 MB LS-120 floppies, recordable CDs, and magneto-optical and CD-ROM drives.

Backup software such as the backup utility in Symantec's Norton Utilities program can make current backups of your data automatically. However, some caution seems should be applied to your backup routine.

For one thing, a common problem with backups is that you never check the quality of the backup. You may be faithfully backing up everything, but something goes wrong, and you find out. We may only detect this problem when it is too late. You should establish a rigorous library of backups, on separate tapes or cartridges, with several sequential versions of

the contents of your hard drive.

And "put them in a safe place" means test that. Backups should be tested away from fire-prone computers, where fires, floods and thieves are unlikely to find them. Most people pay no attention to this advice, until they suffer a major loss of data.

When you lose data, you may either have to reformat it from scratch if possible, or try to "undelete" it. If you're reasonably skilled, or use a disk doctor program such as the one in Norton Utilities, to salvage your files, if the lost data is extremely important, you may have to turn over your hard drive to a professional data recovery lab, where for a large fee they will try to retrieve your data. According to some professionals, not only complexing your hard drive to a data recovery lab, but also software will actually slash this fee more badly if they can't fix them.

### Warranties

If a computer is essential to your business, you should buy from a dealer that offers a good warranty (including a loaner unit while your PC is in for repair). Buy an extended warranty to give extra service, and extended coverage for the entire life of the computer. Do business with a company that has good service both before and after a software or repair.

The brand name computer companies such as IBM, Tandy, Dell, and others are worth considering because of this. Sometimes, though, this higher level of service comes with a higher price tag.

### Power backup

If the power goes off on your computer while it is writing to the hard disk, this can corrupt your drive and prevent the computer from booting up again. If an electrical power surge occurs (like a lightning bolt close by) or a problem with the town's electrical grid, it can burn out components of your PC.

Short of shunting off your computer to the approach of a thunderstorm, or if the light goes out (looking for a good policy), a slight degree of protection can be devised by using a power line with a surge suppressor to supply your PC's power. A much higher degree of protection exists with using a good quality uninterruptible power supply (UPS) system, from a manufacturer such as Best, OptoPS,

### American

### Power Connection

Tripp-Lite and others. A good UPS will provide much better surge protection and will also keep your computer running during a complete power failure using a battery back-up (it'll give you several minutes to save your work and power down your PC and modem).

### Workplace

Computer systems can be fairly fragile if they are not stored with some constant care. Try to reduce the amount of dust and smoke (such as cigarette smoke) in the computer room, to avoid damage to diskettes and drives, and avoid eating, smoking or drinking around the computer, to avoid damaging the keyboard, exposed printer ports, or electrical connections. Static electricity, especially in a dry house in winter, can cause shocks and damage to a computer. A solution is to place a static-free floor mat or plastic mat over the rug at your computer workstation.

### Insurance

Shop around for an insurance policy that will meet your needs. You may not have to look any further than the company that currently insures your household or office contents, but it helps to get a couple of additional quotes.

Computers can be insured under general household or business insurance policies, but you should check carefully to make sure that your policy has a clear definable job (the fact of an insurance claim, usually \$500 or \$1,000, is often not eligible for replacement, and that the policy when full replacement with cash in the policy and a "loss of income" clause in many cases, the additional cost of adding "data loss" is a huge increase in policy to include these items is quite small).

You may be unpleasantly surprised to find that some companies will not charge you a substantial premium for insuring a notebook computer, compared to a desktop PC, because of the higher loss rate for notebooks.

### The price of human folly

There's an old saying that most car accidents have a mechanical cause, the rest behind the wheel. Many of the greatest losses in









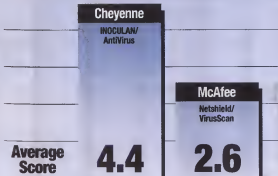




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## ■ PROTECTING YOUR COMPUTER ASSETS

**Paranoid as you wanna be**  
Continued from page 22

### The threat from the Web

Even if you guard against physical threats against your computer assets, you could be landing security chances into your computer, and your life, via the Internet. It's possible for a knowledgeable computer user to collect information on you from one of your e-mail, posts or chat room sessions, and to link your message back to your computer and then collect further information on both your personal life and your online activities

from a variety of online sources. In some cases, this is just harmless curiosity or annoying mischief, but it often can lead you to the victim of harassment, abuse, attempts to defraud you, or attempts to maliciously damage your computer or gain access to your credit card number.

The recent book, *Web Predator: stalkers and predators like "Dr. Peter" himself*, in Cyberspace (by Michael Benita, from Corbis Books, 1997, ISBN 1-57610-139-1, \$14.95) outlines the dangers of connecting your computer to the Web, and the techniques to pre-

vent yourself from people or criminal acts.

Don't get too discouraged by the cringing of potential threats to your computer, though. Once I got over the shock of being victimized by a thief and distributed some basic precautions, it was easier to remember that most people are decent enough, and that any part of life includes a certain amount of risk.

As far as the guy who stole my computer is concerned, "the best revenge is living well." I enjoy using computers and won't allow the experience to be taken away by fear of Murphy's Law. □

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## ■ PROTECTING YOUR COMPUTER ASSETS

## Recordable CDs: TCP tests three popular drives

BY GRAEME BENNETT

**Products**  
Pinnacle 102/1000, Hiwiner Packard 1020,  
JVC JCR-10010

**CD** recordable drives have opened up a new world of opportunities for users. Inexpensive ways to store several hundred megabytes of audio or image data for easy

archive. Multimedia authors who create digital video cassette (DV) or create multimedia "demo discs" of their client's products, even those who want to simply duplicate existing CDs, much as a few years ago they

would have copied a floppy.

We tested three popular CD recorders: a Pinnacle 102/1000, a Hiwiner Packard 1020 (also available as a parallel port-connected version suitable for use with portable PCs) and a JVC JCR-10010. On the three, we'll use the Hiwiner Packard unit as the best recorder based on both PC and Mac. We had huge problems with the packet-writing software shipped with the JVC (which eventually convinced us to use the JVC version of Amigafloppy's CD-R Easy). After switching to Corel CD Creator 3, the PC problems vanished and the drive became usable as a CD-ROM drive as well. However, as we discuss later in this article, there are a few reasons why you might not want to do this.

When the JVC drive was tested on a 60MB-based PowerMac, a random file created with the CD burning software—Amigafloppy's 3.5-Environment—was the JVC unit didn't support the program's RAM cache feature and ran through, we found the drive eventually crashed on that machine.

As it turns out, an extensive 3.5-Environment included with Adapter 7.0407.1.1.1. I don't have a number of compatibility issues with virtually all PowerMacs, including their inability to support some SCSI functions that, a bit earlier, in a PowerMac 1930, the software drive performed perfectly. In fact, we eventually found the Mac to be the best platform for testing both PC and Mac CDs. More on this later.

The Pinnacle unit exhibited some color problems (conversions it made using modes as if the conversion was going fast) but it proved otherwise reliable. The two programs we tested to work the best were Corel CD Creator 3, which we tested with Windows 95, and Toast 2, which had no problems with versions 3.5.2 and 3.5.3 to which we tested on both Mac and Power Macintosh.

Both of these drives allow you, with the right CD-ROM and CD-R hardware, to copy a disc as easily as you might grab a floppy. The potential for illegal use aside, this is very useful for security purposes.

Interestingly, the Corel drive only supports this function if you CD-R burn three or more discs via SCSI. We had a CD-R 80MB drive that didn't work—and Vista's SCSI unit was concerned. CD Creator 3 actually only configured it and made a successful copy the first time. The Windows-based CD Creator's interface is better than that of Toast on the Mac, but that's not to say Toast is a slouch. Toast allows file names to drag and drop files or even whole discs into the program's Source window and a variety of menu settings allow the selection of the always optional "Data protection." CD Creator is almost completely useless (drives—no more Corel 3.5.2s) these days are Toast must be configured manually for the most part and it uses somewhat more complex icons and icons the sophisticated help found in the Windows environment with the Corel product.

The "packet-writing" CD-R technology is "packet writing" that allows you to write to a CD-R disc as if it was a giant floppy disc. Only the JVC supported this packet-writing function, and only on the PC. I had some

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## ■ PROTECTING YOUR COMPUTER ASSETS

### Recordable CDs

Continued from page 34  
 serious problems with that software, as noted below.

Another thing to look for in CD-R drives is a large buffer. As mentioned above, the JVC does not support the RRAM buffer function to "lock on critical files, which essentially stopped it from PowerDown'ing. On the PC, the

JVC and could only write a disc at its speeds with Dual CD-Clocks, although it should have been able to handle 2x writing. The HP eventually handled 2x writing on both Windows and Mac.

We found a super-high performance PCI, SCSI adapter and high-powered computer to be necessary. We tested discs reliably on an old 486DX-based Mac and on a PC with

an old 386SX Adapter (HABCT SCSI) later too, but recommended an Adaptec card for PC-based systems. Good software needs serious hardware for serious recording and best disc setups—some of which may require two SCSI controllers.

Choose a Windows CD-R authoring package that supports the "Pilot" format—Microsoft's Windows 95 and NT CD-Rs use

that for long lifespan—in long lifespan support is increasingly important. Interestingly—and probably not coincidentally—Sony's "Allow file lifespan" option for CD-Rs also creates a disc with long lifespan that works perfectly on both Mac and Windows systems.

Most, of course, come with internal hard and long lifespan in standard formats. We had great success using Western Digital's Compact Mac/PC recording ability to move PC files over to a Mac hard drive and burned PC and Mac files—sometimes both—onto discs using Sony's free Mac/Windows package for copyrighting for more details on Mac/PC.

### Recording Tips

A few tips seem prudent to pass along. Always run a simulation before burning a disc, unless you like experimentally dirtying drives. If you burn multi-session discs in ISO-RAM format, you'll remember a failure during a write session, you can still write other sessions to the disc, and read sessions recorded prior to the failure. In fact, ISO-RAM format internal hard drives recommend backups, skipping unchanged files when recording multiple sessions. Avoid burning CD-Rs in multi-session drive life. Once it's locked into thinking that a CD-R makes a good replacement for a CD-ROM player, they can use the disc and yes, there are models that give reasonable life to even faster processors, but the latter is relatively low—and the drives are too expensive to be burning and while doing the job of an SFF player. Smart users will have two CD-Rs: a 4x or better (SCSI) CD-R format and the second.

CD-R is our favorite backup medium at this point—the greatest advantage being that the CD-R is accessible just after writing, even when stored on SCSI drives. Sony's floppyCD software for PCs, IBM's CD-R drive notwithstanding. When purchasing multi-session drives, we have every reason to believe that it will—this will be a killer feature. Nearly everyone's got a CD-ROM drive at this point, so we don't have to lag a drive around—just a few days.

For authors who need to record both Mac and PC files, Toast and a disc is the best CD-R solution going. The Toast software can even write "Hybrid" discs—mixing part of the disc formatted for Macs, and another section formatted for PCs. Mac discs can also be made bootable with Toast. We use Microsoft's MasterCam Connect 6.0 to connect both Windows PCs and Macs. We then copy Windows or Mac data and application files to a Mac hard drive partition and then drag and drop the files into the Toast window. After creating a simulated burn (which visually shows success), we write the data to CD in ISO-RAM format. We use one of the "Mirror Mac filesystem" option menu where we are burning Windows 95 data—it keeps the long file names intact. Multiple sessions show up as separate Mac drives, and appear to a Windows PC connected on one single drive with clear titles, of course.

Andy McElvaine's CD-R FAQ (http://www.andy-mc.com/CD/Technology/CD-RAM.htm) lists the top models of CD-R burners based on the list followed by Sony's "Pilot" discs "everything else."

As mentioned above, we tested the JVC CD-R burners (which writing software built

Continued on page 40

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## ■ PROTECTING YOUR COMPUTER ASSETS

### Recordable CDs

Continued from page 38

we strongly recommend against using it, at least in its 1.00 incarnation. While we think the software has enormous potential (it makes a CD-R behave like a giant floppy drive), we've noticed similar problems on at least three PCs tested (the 3.51 version of the software was, and the problems are just too

serious—and too consistent—to assume they are just random glitches. Test the CD-R software if you must, but read McLeod's FAQ warning...and back up your system first. The Windows 95 kernel crashed my other CD-ROM drive, messed up the last function of my removable media drive, had problems after installing the software (and didn't provide an "uninstall" option for this

software, either), and had difficulties reading the discs we burned after loading them. At this point we're pretty sure using the discs we created with the software you have to use the "Unload" software to read them.

Finally McLeod's CD-R FAQ also makes some very interesting comments about the JVC drive citing "various flaws." Our two-year-old

the 3.51 firmware McLeod refers to is an additional comment, posted at <http://ftp.netcom.com/pub/lexmark/problemt.htm> in our last issue. Even here they may have serious misgivings as to how we're supposed to use the supplied CD-R software, software not included in Corel CD Creator 2.

The JVC 3040 proved to be a disappointment when we connected it to a PowerMac, as well. The JVC software (that works so well with many other drives) supports the JVC slot, but limitations of the hardware do not allow it to live on in RAM cache on certain Mac models (we noticed problems only on one of three tested Mac options—it was the only one without an FPU). Without the RAM cache, we were unable to successfully write a disc "on the fly," even when dropping files to its write speed. The JVC and PowerMac drives, according to the manual file support the RAM cache. JVC's Web site (<http://www.jvc.ca>) lists other drives incapable of supporting JVC's RAM cache. The latest version of JVC's 3.51-1 supports direct write CD or CD-R recording, allowing the creation of custom-made CDs. Other than that, it strongly resembles its predecessor.

In short, we would name JVC's (recently purchased by Adaptec from its German development partner) as the best CD-R authoring software, at least only on Macintosh.

On the PC, we prefer Corel's CD Creator 2. We're from Germany's Abacus Software. Here is getting actual, as undoubtedly the best value in CD-R burning software for Windows 3.1, Win95 and NT. It allows you to write discs on the fly, making previously recorded CD-R files or discasters available. Here is only DMSR, but supports advanced features like variable gap audio CD recording, drag and drop the companion, disc-on-the-fly and support for a wide range of CD-R units, including the JVC RW-4000 and the JVC RW-4000L, one of the few CD-R recording available in full for it is the company's Web site. It supports multi-session recording (and compression) and individual's Joliet long filename conversion. A fully functional demo version of Nero (the Win95/NT only) is freely downloadable from the company's Web site at <http://www.nero.de>. Check it out—and keep your fingers crossed for a program like JolietPro that fulfills the enormous promise and potential of packet writing.

Check with IDE CD-ROM burner drives should check out Adaptec's Easy-CD Pro 3.5.1.11 which adds support copying from IDE CD-ROM drives. Details are at Adaptec's Easy-CD Pro 3.5.1.11 Web.

We do not recommend the CD-R slot burner in GDI.

Corel CD Creator 2, for 36- and 32-bit Windows is a very nice piece of work. Compared to JVC one feature Mac CD authoring. Test, Corel is offering discs more and simpler many of the steps along the way with its record-always interface. The Windows 95 it supports the creation of discs in ISO-9660, Joliet, Microsoft Joliet formats, plus video and audio CDs.

A notable distinction in the CD package is its ability to create Mac HFS discs, however, it can create ISO-9660 discs that can be used on virtually any platform, including a Mac.

For more info on CD-R technology, see <http://www.cd-info.com>. □



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## ■ FOCUS ON HANDHELD

## Pilot Pro pleases

BY ROD LAMISAND

## PalmPilot

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**T**ry as it might, I have never been able to get excited up about portable computing devices. There are no money drawers.

Number one on my list is cash; I can only keep about spending good money on over-

using costly notes. Second, I don't care for the premium price. From paintings to laptops, compact computers provide less bang for the buck than desktop units. Third, I try to avoid too many basic learning mistakes.

PalmPilot PDAs (personal digital assistants), subnotebooks, notebooks, laptops and tablets all suffer from pure keyboards, unpredictable and complex penmanship systems, floppy and CD-ROM drives and other features that are expensive, eye-straining and get boring problems—every one.

And what is the upside to all this, I ask? "You could write the lyrics to a song on the top of a mountain," the ad suggests. (Original I'd run right out and get one!)

It was with this frame of mind that I tried one more time to find value in a small computer. This time it was the PalmPilot Professional from US Robotics Inc. The PalmPilot is a subnotebook (laptop-like), palm-top computer that knows exactly what it can do and doesn't try to do more. This is the product that I have been waiting for and it is not alone.

The Pilot Pro is the second model series, sold like gangbusters in 1996, capturing half of palm-top sales according to Enterprise Research Inc. based on its new, Cold Flow in 1997, with the original PalmPilot Professional and PalmPilot Professional, sales are likely to increase.

The Pilot Pro is 162 g (3.7 oz.) computer that is slightly larger in dimensions than a deck of cards. That fact it is is 7x3.5x0.7 in.). Last year's models were called the Pilot 1000 and the Pilot 5000. The new device, the Professional and the Professional add back lighting to the 16-in. 60 pixel display (that's about a 1/4 in. or 2.5 in. at 1 mm) it connects directly to desktop, tablets or LAN connections and a simply expense tracking program. The new models also operate on memory to 512K and 128K respectively. PalmPilot is offering no upgrade card and software but did that turn the Pilot 1000 or 5000 into a subnotebook Professional without backlogs, for \$149.

Revealing out the specs, the PalmPilot comes with a desktop grade that connects to your serial port and software for Windows or Macintosh. Two AAA batteries supply power for about two months. Initial is good for such a device.

## Doing a few things very well

It plans and single purpose here is what the thing is called. It is not, and why it is not.

PalmPilot is a simple device. It is a small device. It is a useful device. PalmPilot is a general purpose computer (it is), technical (it is), exactly what it is but let's not question—it can do a lot of things. It is not big, not expensive, it is not busy.

PalmPilot works because it doesn't have the downsides I mentioned above. That's it. It is the concept that it would be. It is not a \$4,000 device. That's what the PalmPilot is so small that looking at except PalmPilot is like the eliminated, here.

My third question: with the busy little interface is also not a problem because the PalmPilot doesn't expect you to input data from a data source. It is a menu on your desktop and syncs up with the PalmPilot by playing the role in its credit and journal backlogs. The PalmPilot works because it doesn't try to be a standard device. It is, you

Continued on page 46

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## ■ FOCUS ON HANDHELDS

**Pilot Pro pleases***Continued from page 42*

can use the Corliss ability to enter text or numbers fast for the most part, why bother?

What you get is a portable device that adds better appointment calendar, task list, calculator and email program. That is a lot in itself. The Pilot Pro will hold 4,000 addresses, 2,400 appointments, 750 to-do

items, 750 memos, and 100 pieces of mail before it acts out of memory—the handheld version has half that.

One area where the Pilot really shines is in its application for incidents. By combining its abilities with a wireless modem and local area network (LAN) connection, software, computers can give field personnel complete access to email and database connectivity. The

unit is somewhat under-powered and fragile for the demanding use of constant and costly people but for specific applications such as recording a company-wide, constant error database or email, this could be the product.

**Drawbacks**

Like all products, the Pilot has a few downsides.

One is that the email program is relatively useless. Unless you have the PalmPilot remote and/or LAN connection features.

The other is that I would expect the unit to run less long and depend on more and then require less synchronization. The unit finally did up my last on-leave provider (CPT)—rather than simply changing on the desktop—seems silly.

Another downside is that you may have peripheral devices, such as an external modem or mouse, that usually occupy other parts. I do, and this means I have to go behind the computer, disconnect the modem, and plug in the handheld cable card every time I synchronize the unit. I wish there to remove this procedure every time is well. The solution, of course, is to get another serial port (or) to use for the external serial bus (USB) version of the handheld cable (the date is unknown).

The last downside is that the accompanying software is unlikely to fulfill your needs and you will possibly be forced to buy additional products. If this were a Windows CE device, the need for this type of software would be somewhat reduced—if you were willing to use Microsoft Scheduler or Outlook.

There are valid concerns aside. This is the first portable computing device that has truly satisfied my needs for economy, security and usability. It is really just a very powerful pocket organizer and...glory be, I love it! The PalmPilot from 175 buttons gets the real deal this review. ☐

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**IBM to recall  
PalmPilot as  
WorkPad**

IBM will recall its small 3Com Corp. handheld personal digital assistant (PDA) under the name WorkPad. IBM will focus on the corporate market with the repackaged PalmPilot, but its distribution channels will market 3Com's to some extent.

3Com, of Santa Clara, Calif., is to build and ship the PalmPilot for IBM to PalmPilot subsidiary will package the device in a black case bearing the IBM logo instead of the gray one, 3Com says.

All applications that run on the PalmPilot will run on the WorkPad, IBM said. These include Lotus Organizer, the personal information manager from IBM subsidiary Lotus Development Corp. Lotus officials said they plan to offer their support for the WorkPad, such as the ability to synchronize data with Lotus Notes, in the next three months.

IBM will sell the WorkPad to IBM clients only sold in the United States. As for sales beyond the U.S., IBM spokeswoman Linda Hanson said "they need to...consult further."

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## ■ FOCUS ON HANDHELS

## Java in your pocket

BY GEOFF WHEELWRIGHT

Handheld computers have not been the devices you would ordinarily think about using to run Sun Microsystems' popular Java programming environment for the Internet. But there appears to be increasing interest in doing just that—and more handheld computers are being designed for this purpose.

While it is true that both World Wide Web browsing and e-mail functions can already be carried out on some handheld systems—including many Windows CE-based systems, Palm's Series 3 series and Japanese notebook computer giant Toshiba's recently introduced Myrin SCIT Windows 95-based 640 x 480 x 16-bit "sub-notebook" system—it is not an ideal way of running Java.

Only the Toshiba system (which is simply a physically small Intel Pentium-based computer) is also capable of running any Java software that can run on a standard-powered desktop PC. It only runs the Java 1.02. And all the above-mentioned systems are based on the notion of using existing software environments to run applications (PalmOS CE, PicoOS EPIC operating system on the Series 3 and Windows 95 on the Toshiba) rather than Java.

## Java beyond the Net

Sun Microsystems wants to change that. Since Sun first introduced Java for the Internet almost three years ago, there has been strong and active speculation about the other things you could do with it. Programmers quickly discovered that you could use it to write software that desktop

computers could run over the Internet, while Oracle Corporation chief executive officer Larry Ellison also decided it could have the best of a whole new computing platform: the Network Computer.

Other computer manufacturers turned their minds to the idea of devices that would use the power of the Internet to allow software to run over the World Wide Web a few more options were to mind. One of these was the Java-based handheld computer. Skeptics initially dismissed the idea, since one of the guiding principles of the original Network Computer concept was that most processing would be done remotely over a network or the Internet.

A handheld computer that was to be used in a mobile setting was not thought to be a fully capable of doing this. In a model, as making a connection to the Internet or an other network would be difficult or impossible.

## Getting personal

According to Sun Microsystems Canada's Java specialist, Chanté Wynn, the big opportunity for development of handheld devices is around an implementation of Java known as PersonalJava. It will run in 2 MB to 4 MB of memory space (many handhelds only come equipped with up to 1 MB) and Wynn says PersonalJava is currently under evaluation by many companies as a platform for running handheld applications.

She says one of the most crucial aspects to PersonalJava may be the Mobile Network Computer Reference Specification currently being implemented by supporters of the Network Computer (including Sun and

## Oracle's Network Computer Incorporated).

Factors of this specification have suggested it may be appropriate for a wide range of mobile devices, including handheld PCs, smart phones, low-end laptops and personal information managers (PIMs). They also suggest that personal productivity applications (event planners, spreadsheet gridfiles, telephones, e-mail readers, collaborative applications, video or data conferencing, Internet and Internet access) would all be at home on such devices.

## Three flavors of Java PCs

The Network Computer (NC) group defines three classes of mobile Network Computer devices running Java. The first is called the "professional assistant," which is placed on a device fully capable of supporting "full" Java, contains so that it could run very complex Java software. The group suggests that this device could also be used in a "disconnected mode" and support "application" with the user server for file or application updates. This simply means copies of files could be kept locally on the handheld so they could be used without maintaining a connection to the network. The professional assistant PC device would also need database access, mail, printing, directory service, management access to existing enterprise applications (for example, 3270 emulation, terminal emulation, security, and file browsing).

The second type of mobile NC device is planned as something that will have less functions than the professional assistant and focus primarily on being an information access device. Web browsing and basic email

support will still be required. It would still support Java "applets" (between applications) but Java would be limited in performance and memory capacity. As a result, developers of the specification suggest this device would be most dependent on a network connection, but would still allow some limited functions when disconnected.

Finally, the third type of Mobile NC device being proposed is a very basic messaging, paging, telephony device that has a focus on keeping the mobile professional in touch with the office. LAN and/or Internet support would be required for the mobility and to provide a common subset of functions across all Mobile NC devices.

It is the "professional assistant" style of device that Sun expects to be produced first. "We need to work out how to execute it in a disconnected mode and how to deal with a need to cache it," Wynn says, "especially since applications and how they connect," explained Wynn. "We also need to work on Internet standards for handling data."

Wynn says that first of these devices (probably in the professional assistant category) will come out in six to 12 months. She also suggested the most interesting development may not be around a device that contains the functions of today's laptop computer, a handheld device.

"I'm not even sure that is the right move (the Java-enabled mobile device)," Wynn explains. "The interesting thing will be doing as the back door. It will be things like the Java-enabled cell phones that can connect to applications which would push information to them on a wireless network." □

## Flying with a handheld

BY GEOFF WHEELWRIGHT

For most mobile computer systems, the old "make it Java!" test of the application code will be replaced when you are talking in an environment that is a commercial flight—about where I am as I write this. This is especially true for handheld computers, which carry with them a whole new set of capabilities and responsibilities that go well beyond what you would demand from the average desktop computer.

Owners of Java come up when you are using a handheld computer during a flight. The line—and most obvious—is battery life. There is nothing more disappointing than suddenly finding that the power has run out 10 minutes after takeoff.

The great thing about handheld computers—and where they have not reached back-to-back, to to open it—that the battery life problem can generally be personally solved with a little forward planning.

You see, most handheld computers operate on a couple of (or at most, four) AA batteries, which can be purchased in almost any airport gift shop or news-

## stand, that of battery life problems.

Handheld computers also are a lot less power than desktop computers and you can naturally expect them to be able to run for a couple of weeks with moderate use before you need to replace the batteries. There are a couple of caveats, however, that relate to how you use your handheld. If you use a handheld much of the time—or use a PC network often—your battery will drain a lot more quickly.

Anyway, back to the airline test. The one big test for handheld computers on a plane is the often-rumored test you reasonably use the keyboard on your handheld while sitting in a plane seat without having your elbows protrude wildly over the armrests?

The second part of this is the "would you like your dinner now?" test, which requires that your handheld computer be designed intelligently enough that you can snap it shut when your dinner or whatever that strikes most at service. This also allows it to happen without you looking at your device, thereby delaying service to other passengers.

Follow this test with the "can you

move your computer out of the way easily enough when the person sitting next to you spills their drink as you check out" test. If your handheld computer is too big or protrudes too much, you will have more trouble than it is worth.

Now comes the point where they "take the other flight." If you do not have backlighting on your handheld—or the use of that backlighting adds up to much battery power—that means little time to use it—in this demanding cabin flight—could mean the end of your flight computing experience.

Last, but not least, your handheld needs to be able to survive an unexpected fall from the plane. If you end up accidentally grabbing up all the mail you have taken out during the flight and snuffing it quickly into your carry-on bag, and then find that your handheld falls out because you haven't clipped it up high properly, it needs to be able to survive that fall.

A good handheld should be designed like a cockroach—able to be squeezed, broken up and possibly even run at it without without dying or grilling squished. □

## Sun finalizes P-Java, merges paths for devices

Web-run Microsystems has finalized its Personal Java (P-Java) and Java-to-Go (J2G) specifications, and a long list of newly named partners the option of integrating other Java or Java-to-Go into open operating systems (RTOS) for devices like pagers, cellular phones, Web phones and set-top boxes.

Sun also describes P-Java, Embedded Java (E-Java), and Java as "subsets" of Java, designed to meet the needs of specific markets. P-Java is aimed at devices with "graphical displays," whereas E-Java is for devices with character displays, or no display.

Sun's newly named partners in the RTOS space include Chorus, Lucid, Microware, Comshare, Microsoft, GSP, Acorn, and Wind River. Sun recently announced plans to acquire Chorus, a company that owns Java's Java-based OS for embedded systems, among its products. Together, the newly announced partners represent "more than half the commercial market for RTOS," according to Sun.

Sun intends to participate in the RTOS market through Chorus, but also to offer a "Java layer" to partners, according to the Sun official.

Spokane-based Sun Microsystems, and its partners, will continue to design Java in the P-Java mode. Moreover, Microware, for instance, has already done its design to RTOS-in-network PCs from IBM, cellular phones from Motorola and Ericsson, and set-top boxes to be deployed by Hong Kong Telecom, and a company representative of

Contact: National Information Group Java is available at the Sun Web site: <http://www.java.com>



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## ■ FOCUS ON HANDHELDS

# The perfect handheld computer: I'm still searching

BY GEOFF WHEELWRIGHT

**M**y perfect personal digital assistant (PDA) would not be hugely different from the Palm Series 3 handheld computer I am using right now. The Palm has a quite reasonably sized screen, a screen with backlighting that allows you to see any text full-width, and it runs on two AA batteries.

Better yet: it provides software that is fully featured and stable—yet not so bloated that it regularly impacts on the performance of the machine. I am not hugely concerned about whether or not it has a pen interface (the Series 3 does allow you input but does not require it), although being able to do this is something on the screen is fun now and then.

Having said all that, the Palm Series 3 is still not my perfect PDA. To begin with, it doesn't offer great Internet wireless communications. Like most handhelds, it does provide an IrDA-compliant port (infrared communica-

tions have now standardised on the infrared Data Association—commonly known as IrDA)—specification for infrared wireless communications, but what I am really after is a machine that lets me browse the Web and check my e-mail without having to plug in power leading to PC. Cool wireless or radio-based web and e-mail connections between cell phones and handheld PCs.

The closest I have seen to this ideal is a Windows CE handheld equipped with Remote & C-based Internet's Windows CE wireless e-mail system. While I am generally not an enthusiastic supporter of Windows CE systems, the ability to wirelessly send and receive electronic mail is highly appealing. Internet users write the data technology as transfer electronic mail in such the same way as a pager, so messages are received automatically without you having to use a phone line to log onto some rural modem.

The next great innovation I'd like to see in my perfect PDA is a hands-free way of syn-

chronizing data with my desktop computer. The best I have seen so far is the Palm Pilot While Windows CE is not bad either—and this is a bit "ho-hum" either—some of the current available options are ideal. They either rely on a proprietary "cradle" for data access, a serial cable or an infrared link (which means you need infrared on your desktop computer as well if you can't do data with it). In the long term, infrared data transfer would seem to be the best option, but it would have to be more universally offered as a desktop option first.

Finally my wish list for the perfect PDA would also have to include a really great Web browser that could handle all the different browser "traps" I am likely to want to visit—including streaming video, audio and Java applets. Right now, the only handheld computer I can think of that could come close to meeting this—and most of the other criteria on this list—is Toshiba's nifty Libretto.

Of course, the Libretto is not a handheld

PC in the usual sense of the word, but in fact, a fully functioning notebook computer that has been engineered down to near-handheld size. As a Pentium-based sub-notebook that runs Windows 95, provides 16 MB of RAM, 136 MB of storage and weighs in at a mere 870 g (1.9 lb), the Libretto definitely satisfies almost any other handheld you test you could think of. I did find the keyboard a little tight, the battery life a little short and regretted that Toshiba was unable to include a keyboard extension as a standard option on this machine. But right now it is the only handheld I know of that will run everything from RealPlayer to Java to Acrobat readers—and that is a pretty strong argument in favor of logging in to show screens.

Each of the systems I have mentioned so far is a compromise that provides most of what I am looking for, but comes up short in a couple of areas. In an all-purpose handheld PC, the Palm is always just a little short, although it fills down on the communications front. ■

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## ■ FOCUS ON HANDHELDS

## Windows CE HPCs show signs of life

BY GEDF WHEELWRIGHT

Windows CE finally came into its own this summer. After a flurry of announcements and new product introductions last year, the response to CE appeared to have diminished. Those who were expected to use these machines.

Microsoft is set to shortly release Windows CE 2.0, however, and looking for the handheld computer platform appears stronger than ever. Despite some initial disappointment, it looks like Microsoft is committed to getting things right.

At Microsoft's recent Professional Developer Conference (PDC) in San Diego, for example, attendees were offered Compaq's PC Companion (with 4 MB of RAM) for \$299 and were promised that they would be able to upgrade to Version 2.0 of the CE operating system in November. The machines were shipped up by date of the show, thus 3,000 developers attending the conference and plus the expected number of those people to start seeing CE applications in their little devices with their new machines.

More solid evidence of a commitment to CE came in mid-September with Sharp's announcement that it would move into the CE market before the end of the year. Sharp has been one of the top three handheld computer makers for years, and its plans to produce a CE system is big news.

And it is Microsoft's big corporate customer base that is motivating Sharp to do this. "We believe Windows CE is creating a new category of mobile products by addressing the needs of the corporate user familiar with the Windows OS environment," explained Ted Burton, president of Sharp's U.S. Mobile and Home Office Equipment Division. "The addition of a Windows CE line builds on Sharp's strategy to offer a variety of handheld products to meet the needs of every user."

Much of the push being made by Microsoft for Windows CE is aimed at developers. Unless developers create applications for CE, there will not be a compelling reason for users to buy it. Although Microsoft has demonstrated versions of its own applications to run on CE, these alone will not get CE the broad support it needs to succeed.

That's why Microsoft was suggesting in early September the fact that some 100 independent hardware vendors (IPVs), independent hardware vendors (IHVs), and thousand vendors have demonstrated support for Windows CE by developing more than 250 applications and peripherals.

The company boasted that its corporate customers can purchase off-the-shelf productivity products ranging from wireless email solutions and contract management software to software for health care and exact vehicle location and application development tools. Microsoft also emphasized that the recent release of a variety of new games, communications applications and utilities further expand the options available to CE users.

It also was time to make the point that CE is aimed at being "technical compatible" so applications will not have to be rewritten when Windows CE 2.0 is released next month.

In fact, the big question for potential users of CE machines is whether they should buy a CE system now and upgrade the operating system when Windows CE 2.0 comes out or wait until new systems are released that take full advantage of the new CE specifications.

Microsoft is working with all existing manufacturers of Windows CE-based systems to ensure "smooth upgrades" to versions of version 1.0 systems. Microsoft expects that

Compaq Computer Corp., Compaq Computer Corp., Hewlett-Packard, LG Electronics Inc. and NEC Corp. will offer additional 2001 upgrade programs. At press time, Hewlett-Packard and NEC had not yet announced their plans.

Continued on page 44

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## HANDHELDS

### Free downloadable software for Psion Series 5

PS- In a burst of optimism that may not be strictly warranted to Series 5 production problems and a company profit warning, Psion has announced that the Series 5 PDA's optional digital content has come within reach and its integrated managing tools are available for free charge from its Web site.

According to company officials, the content package will provide a single point for managing notes in email and later, plus a help facility for the Internet and corporate networks. The PDA's package allows users to send and receive files using virtually any modem and external telephone line.

Psion Chief Executive Officer John A. Houghton says officials see a selection of features that includes content and



## ■ UPGRADING YOUR COMPUTER



# Notebook upgrades and expandability

New CPUs, expansion technology add years of usefulness and versatility to pricey portables

BY ROSS MACDONALD

Clearly, readers of the Computer Wire will recall the much hyped and well-timed year that a company called Pentium Upgrader had set up in Canada and could actually inject some new life into our grumpy hardware.

Through much experimentation—and the judicious application of a special CPU soldering/mounting iron—the good people at Pentium Upgrader had managed to successfully install matching specific portable computers to more current third-party CPUs and hard drives. My NEC Versa, for example, was blessed under the banner of a 486 DX2-33 but now streams more fluidly through its paces with the help of a 586-100 MHz Pentium replacement.

More than a year has passed since we first took at notebook upgrades, as it seemed appropriate to begin this week by checking in with Pentium's lead technician, Scott Knight, and the manager of research and development, Adrian Gilt.

"There has been quite a bit of progress in our notebook upgrade abilities since last year," says Gilt, "and our database of upgradable notebooks has grown to more than 700 machines. We now also have a Web site that includes a searchable database that allows people to look up their particular machine and see what kind of upgrade we're able to offer for that model."

One interesting development has been the company's introduction of dual-ported CPU and hard drive upgrade kits for a number of notebook computers. But before you get too excited, Gilt says there are only a few very specific Compaq Elite and Cackoon 486 models built in such a way that the CPU can be removed and a new, higher-level chip installed without significant expense.

However, a much broader range of portable facilities user installation of hard drives. Knight points to their rich dual-ported kit in classified into one of three levels of difficulty and that complete instructions are included. "We will sell do any upgrade for the customer ourselves," he says, "but they can save up to 30 percent of the cost if they're willing to undertake the project with one of our kits."

Besides its costs, Gilt explains why upgrading should be seriously considered by

Continued on page 58

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## ■ UPGRADING YOUR COMPUTER

### Desktop upgrades and expandability

practically means "what people should think as with an upgrade is what a low-compatible machine would cost them. That mix of thumb is to top and keep the cost of an upgrade lower but the cost of a new computer. That's not all of the thinking going on to determine whether an upgrade is economically viable." He says the upgrades to 486 machines are restricted by the 33 MHz bus, "but in most cases we are doing that machine up to performing like a 133 MHz machine with a 66MHz. That's a significant enough improvement to be worth the cost. But there's also the limit in those machines—we can't get them to run above 133 MHz."

With costs hovering around \$1,000 for a combination 633 MHz Intel CPU and 1 GB hard drive, the prospect of upgrading and keeping per unit \$4,000 machines going for another few years is very appealing in the face of spending several times that for a new machine. And Pentiums will open the sliding a whopping 3.1 GB notebook hard drive for \$2,799—which, incidentally is what a 1.5-GB drive cost only a year ago.

"Where memory is located continues around right now," says Knight. "And, though that's really available these days for most machines and can be found in cost steps we still see a lot of really solid machines coming through here with modest upgrades. We just haven't automated it yet. The good news, however, is that 486 has proven a lot cheaper lately with 16 MB running about \$300 to \$500—down from over \$700 only a year and a half ago."

Knight says the company is anticipating a lot of a shift toward entry notebooks, "with the Pentium upgrades that we'll be offering near the end of this year. All Pentium machines use the same bus speeds, so we'll be looking at upgrades into the 200 and 233 MHz class from existing Pentium upgrades will be a lot more straightforward with Pentium machines because the only difference with the faster Pentiums versus the older ones is the internal processor core speed."

Those faster Pentium upgrades will include the ability to install the new Mobile PC Pentium Pentium processor with built-in 3DMM technology that lets only announced in September. These are 200 MHz and 233 MHz CPUs constructed especially for portable computers. According to Intel's announcement, these new chips consume up to 50 percent less power than current chips because they can run at less than reduced from 2.5V to 1.8V and the input/output interface from 3.3 to 3.0 volts. "This reduction in voltage," says Intel in a document, "is a key element in enabling the production of faster processors that consume less power."

But and Knight expects to be able to offer this upgrade soon after you read this. "It will be a difficult operation," says Knight, "but we're developing the technology right now to be able to install this new chip into any existing Pentium notebook by the end of the year."

"We like the idea of 3.1 GB disk, because, though the actual silicon chip is smaller than existing Pentiums, the package it's in (and the mounting system) is identical."

Git expects the upgrade business to happily continue despite the fact that laptop buyers are of it, that entry machines have a lot more business. "With the brain in notebooks,

large screens and more RAM and such, a lot of people will find it far more economical to get a CPU upgrade than buy a new machine because CPU speed continues to be the essential difference between older and newer Pentium machines," he says. "There's a stable percentage of users that always want to top and keep up with the latest and best and latest technology. That's the ones prepared to buy

an upgrade for their machines as soon as one is available."

Git says notebook purchasers have to carefully look at the upgrading of any machine they're now thinking of buying because even though notebook manufacturers are often fast to add ability as a selling feature, they don't offer the upgrade modules for very long as they won't be very high profit-

margin modules in the first place."

Obviously, however, that's why Pentium Upgrades programs. They'll reach out the highest upgrade level possible for any of us who are willing to stick our limited old notebooks despite their comparative sluggishness with the passage of time.

Continued on page 42

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## ■ UPGRADING YOUR COMPUTER

### Workbook upgrades and expandability

*Continued from page 59*

#### What about expandability?

Workbook expansion is inherent in the extent to that a hardware (or what you call it with your notebook is updated to how fast you can think.

PC Cards (PCMCIA) tends to be obsolete here from a primary vehicle to expansion for several years now but we're also more recent-

ly witnessed a proliferation of device that plug into our CDROM ports, making it levels of working station designs and workbooks with some designs that incorporate positions "expansion bays" to accommodate a growing range of alternative devices.

Bob Dobson, notebook product marketing manager for Compaq Canada, is big on expansion bays. "They offer the most flexibility in a

notebook because you can put a CD-ROM drive, or a floppy drive, or a second battery or a second hard drive into them. That versatility allows you to configure the notebook specifically to look after your needs and what they become as time passes," he says. "I don't see because of this versatility, be doesn't see expansion bays going away in the future—this is the best of a growing number of

devices that plug into your PC cards and CDROM ports." In fact, you will actually see more devices being offered for expansion bays," he says. "The 13-16 is a high-capacity disc drive that accepts both internal floppy and optical (CD) both floppy and they deliver on DVD players, all of which will increase the flexibility of the notebook even more."

A logical conclusion, then, is that manufacturers must make all their notebooks with expansion bays in order to best accommodate the widest range of potential customers. But, of course, they don't. According to Dobson, that's because many entry level buyers are attracted to a "just off" by innovative components.

"This is a lot of notebook users want a lot and they want to reduce the number of components they have to take with them—floppy drive, CD-ROM drive, second battery, AC adapter—one of those makes companies is looking to keep all those options expandable," he says. "These users need to want an all-in-one machine—with a modern built-in and a floppy drive and CD-ROM drive accessible all at the same time. So most notebook manufacturers will continue to offer machines with solid internal expansion bays despite the drawbacks of reduced flexibility when there are none."

When considering the purchase of a notebook, Dobson explains that expansion should be carefully considered in terms of what you really need and want later. A notebook, expansion for expanded notebook is increasingly going to cost more and internal not carrying any of those optional external. The "internal" customers will be relatively changes, but will either have to be replaced in more expensive expanded through the AC adapter which you don't need more flexibility down the road.

"PC cards will remain an interface for a long time to come," Dobson says. "Because they are a way you can add more specialized functionality when there is a hard right now to build a machine right into the notebook, for example you will need PC cards to add a VGA monitor, or for inherent reasons and that sort of thing. I think eventually even the manufacturing will be portable through a PC card, so that there is the kind of functions manufacturers won't build in to every notebook because only a few people would want them while they would increase the costs to everyone."

"But there's another way to go too, which is using docking stations to add expandability," he Dobson continues. "That way you're though you might have a notebook that isn't full featured, a docking station can make it full featured."

Though they haven't been particularly popular at the consumer level, most manufacturers offer up to 16 docking stations to use with different levels of sophistication for their individual notebooks. In the work-as-and cheaper—and it things in the so-called port expansion, which naturally plug into the back of your notebook to give you additional connectivity through parallel, serial and CDROM ports. When we might call expansion—and especially into alternative—docking stations follow. They usually feature internal storage features like a CD-ROM drive and a second speaker, a backup device, etc. They're also all for many manufacturers with other full-blown, very expensive docking options.

*Continued on page 68*

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BY GRAEME BENNETT

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with the dual voltage required to use the large MMX technology.

Pentium-family processors with MMX, as you may know, speed up virtually all PC applications, thanks to the slightly larger internal cache. Additionally, programs written to take advantage of the chip's specialized MMX instructions enjoy an additional—and often substantial—speed boost. Adobe Photoshop 4.01, for example, is MMX optimized and provides more than a 600 percent improvement in performance on our MMX optimized system.

Typically, the CPU Energizer is a small device (smaller than the size of a Pentium chip, than the CPU plug-in). It cannot be plugged into a motherboard designed for a 486 or earlier CPU (a little larger than Intel's compatible OverDrive Processor, the Energizer allows a standard Pentium CPU with MMX to fit your 486SX or 486DX CPU/MC socket and chip-cooling fan or be plugged into it.

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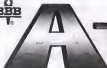
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## ■ UPGRADING YOUR COMPUTER

### Step up the MMX

Continued from page 70

BIOS for us, this was also more than a little stressful as, of course, without a working BIOS, the computer wouldn't work at all. (We tried Award BIOS updates, like most older utilities, almost you're back up your existing BIOS code—a step we'd definitely reserve and.)

To our considerable relief, the system still

worked after the update, although we were somewhat disappointed by bugs. Windows 95 messages that informed us that we had no mouse connected and that no floppy drive was loaded; in reality, I2304 ports, local device nodes and enable the floppy drive controller as the BIOS. We then powered down, switched all the jumpers and connectors the way (again) and gave the CPU a bang-up

another try, providing ourselves this would really, really be our last attempt.

### Brown roll, please

Oh power up, we were greeted by a somewhat very encouraging MMX message. This time, it stated we had a 200 MHz Pentium with MMX. Even better, it booted properly and gave us no further problems. A happy ending!

When we showed our findings with Pavilion, the company said its deal with AMD and Intel suggested that approximately 90 percent of systems do not require a BIOS update to run the MMX processors. Apparently, our machine was the only one out of more than 100 with OverDrive installed where the CPU did not work out of the box.

## Position OverDrive with MMX technology

Can Intel

Street price: \$425 (P50-MX model 200 MHz processor available in slightly more)

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Intel has made sure to make the installation of its OverDrive processor as easy as possible. Unlike the CPU Upgrade, Intel's upgrade requires no power changes, wire, jumper changes, or other fiddling. An simply powered down and opened our PC's case. With the OverDrive Processor, Intel's OverDrive CPU Upgrade—it goes well! and dropped the new CPU in place, ensuring that the "out-of-box" on the chip matched the design on the case. We'll also point the CPU back down again and powered up our PC.

### Comparing Upgrade and OverDrive

Unlike the CPU Upgrade which, at least in the version we tested, puts a 200 MHz upgrade for any 75 MHz or better Pentium system, the Intel OverDrive Processor with MMX Technology runs a 75 or 90 MHz PC into the equivalent of a 140 MHz Pentium and a 200 MHz Pentium system with a 100 MHz Pentium or better processor can be upgraded to the equivalent of a 200 MHz with Intel's higher-priced 200 MHz OverDrive processor.

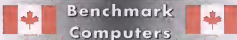
We didn't notice any difference in subjective performance between the high CPU Upgrade-enhanced system, and the same machine loaded via the OverDrive Processor with MMX Technology. In other words, benchmarks will prove the superiority of the 200 MHz chip, but you are not likely to be able to tell the difference in actual use.

As you might expect, both MMX upgrades provided a significant improvement. Intel says 50 to 75 percent performance may be expected from 75 MHz Pentium and 90 MHz Pentium based systems over the original non-MMX CPUs.

Thus, we recommend the CPU Upgrade for 75 MHz or 90 MHz Pentium systems that have spent above all else and the Intel OverDrive processor with MMX Technology for those who like their upgrades to convert and multi-functional in general.

Intel includes a CD-ROM with an MMX

Continued on page 74



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## ■ UPGRADING YOUR COMPUTER

### Step up to MMX

**Continued from page 72**  
primaries level, however, you also get the disc with the latest MMX-optimized version of the CPU Manager. On the disc, you'll find Intel's Pentium® Better Mouse Doing, an adult-oriented game in the robust style of Doom or Quake, with impressive speed, sound and fighting effects.

For the younger set, there's an interesting program called Third Dimension from education software developer Davidson. Third Dimension uses MMX and 3D technology to simulate a "holodeck" where three-dimensional objects can be "materialized" and manipulated—a sort of virtual reality lab for kids. It's very cool and some of the objects, such as a faxed-in, are quite realistic looking.

To keep things interesting, the program offers a number of sticky controls for animating and distorting the 3D objects.

In addition to the CD-ROM, the Intel product also comes with a detailed manual, plus a MMX Diagnostic Utility on diskette (also downloadable from Intel's Web site) to help you determine if your system is compatible with the upgrade. Like the CPU Manager, you

might need to upgrade your system's BIOS before an MMX upgrade is possible.

### Other differences

There are some critical issues that differ between the CPU Manager from the Intel Developer.

1. The Intel 386 MHz Developer with MMX only works on Intel's 7 motherboards (currently 4,897), 121 MHz and lower boards whereas the Manager will work on Intel's 3 motherboards as well (75 MHz and over Pentium boards). The reason for this is simple: The Developer does power through the CPU socket but can use that only power adapter to draw power from the power supply. The enhanced upgrade on Intel's 3 and some Intel's 7 boards will not provide the higher current that 386 MHz and 333 MHz Pentium MMX processors require. The original bypasses the onboard regulator altogether. This also means that the Developer injection rate on even Intel's 7 boards is higher than the Manager.

2. Pentium says it provides (just 300 and 333 MHz) MMX versions of the CPU Manager, Intel only has a 300 MHz with MMX and will not likely provide a 333 MHz with MMX for the reasons stated above. Pentium also has MMX 66 and 75 MHz with MMX versions of the Manager available.

3. The Intel Developer uses a hard clocking method that limits its application. The CPU Manager allows the user to select a specific clock multiplier to ensure the greatest degree of flexibility of the product. According to a Intel spokesperson, one could try a 100 MHz with MMX CPU Manager and there are various bus speed combinations to run the processor at 140, 135, 140 or 300 MHz depending on requirements. (The Computer Paper does not cover bus speed timing, processor beyond this clock speed.)

4. The CPU is removable from the CPU Manager, which means the Manager itself can be upgraded to the latest processor it supports up to 300 MHz by simply replacing the CPU with an "all-in-one" model. The old CPU can then be sold.

### Conclusion

**Pentium:** If our system had not needed a BIOS update, the upgrade would have been much easier as the four steps mentioned earlier in this article. Pentium says that, of all the systems they have upgraded, can was the only one that needed a BIOS update. For most Pentium PC users the CPU Manager represents an easy path to higher-performance computing. For considerably less than the cost of a new motherboard—and to increase the system installation—the CPU Manager delivers a significant processing boost (overall), a more than doubled user system's performance and MMX compatibility that can help stretch the useful life of a low-end Pentium PC.

**Intel:** Upgrade don't get much easier than that. At a cost of less than \$500 the upgrade can give a new look and life to those of us with older 75MHz or better Pentium models. □

Continued

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## ■ TCP TEST LABS

## New generation processors

Continued from page 80

noting that the long-awaited 486LX chipset made its debut in notebooks. By word count, the only option we've got a hand with is the old 486LX chipset on 4 from the days of the Pentium 100.

Although it was possible to get a Pentium II chip to run with this chipset, it wasn't by any means the ideal choice. Among the newbies in the 486LX chipset, there are devices for even no support for SDRAM and support for the new AGP. With a high-speed processor like the Pentium II, especially the 333 and 350 MHz versions, you'll want to use matching level-2 cache-SDRAM. This can go by one SDRAM bit for maximum performance; you'll want SDRAM. The 486LX chipset also offers advanced power management, as well as support for MMX. Like Intel's support and better overall optimization for the Pentium II processor. For more information, on the 486LX chipset, point your Web browser to <http://www.intel.com/usa/processors/486/>.

## Not how fast is it?

It's very fast. Aside from the obvious increase in clock speed, the Pentium II has much more going for it than just a number of megahertz.

First, designed with the Pentium Pro dynamic execution technology is now also found inside the Pentium II. In a nutshell, this means that the processor can predict upcoming instructions at a program with as accuracy as high as 90 percent, thereby always keeping itself busy with something useful to do.

Another increase in system speed comes from the new dual independent bus architecture. This dual bus is made up of the Level-2 cache bus and the processor-memory system bus. The operating speed of the Level-2 cache on the Pentium II is half of the clock CPU frequency, so at a 300 MHz system, the Level-2 cache is running at 150 MHz. This is a considerable improvement over the Pentium's cache speed of a fixed 66 MHz. The power cache on board the CPU has also undergone change, having been doubled in size to 32KB, further improving system speed.

Overall, you have benefits that a standard value improvement is found in every part of the test, especially where graphics are concerned. Using the popular Sierra 3D3 under Windows 95, a plain Pentium 300 MHz processor got a score of 43.9. In comparison, the top of the line 350 MHz Pentium II processor scores 141.3, more than three times the amount. That same 300 MHz Pentium II scores a SPECint95 rating of 11.7, and a SPECint95 rating of 7.1 on the popular 3DMark Index 2.9. For the 300 MHz processor scores 322, while the latest Pentium, the 333 MHz version, scores 267.

For more detailed information about these benchmarks, check out this Web site: <http://www.intel.com/usa/processors/pentium2.htm>.

The bonus here is that if you're doing anything that's CPU intensive, such as 3D rendering, two-point parsing, or heavy text file searching, the Pentium II will be so busy it won't disappoint you.

## So what's this AGP thing?

AGP is the latest standard being discussed in the computer sector. It stands for accelerated graphics port and it's a new interface designed by Intel strictly for high per-

formance graphics, especially 3D graphics.

The idea behind AGP is to deliver workstation-quality graphics and speed to the home computer. In its most basic state, you will see a new slot next to your PCI slot, similar in size and shape, although completely separate from the PCI bus. AGP is designed strictly for graphics cards; that's nothing more, nothing less. It's not going to

replace the PCI bus, as it is in every way different from it.

The AGP port operates at 44 MHz, versus the PCI bus at 33 MHz. As this speeds, the PCI bus is limited to data transfer rates of up to 133 MB/s, whereas AGP has a peak transfer rate of 528 MB/s with a technique called sidebanding and the help of pipelining. Perhaps the greatest thing about AGP, aside from its

obvious speed, is the way it handles video memory. AGP can make use not only of your video card's on-board RAM, but it also has the ability to access your system's RAM directly to store complex images that would not otherwise fit into the space of 4 MB in a typical video card.

And here the AGP operates at the same speed as the memory bus, making it

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## ■ TCP TEST LABS

writing to memory is a factor. Because it is a relatively expensive bus, there may be any other components that could weigh it down, such as is the case with current PCI video cards.

At the time of this writing, both ATI and Matrox have only engineering samples of these cards, but they are expected to be shipping into the fall. However, we did receive an

ACF Member 3Dc Revolution graphics card but haven't yet tried it with an ACP main circuit board. Don't be too quick to jump on the ACP bandwagon, however, because there is certainly no support for it at this time. The upcoming Windows 98 issue delayed until next May and NT 3.0 are both scheduled to have full support for ACP.

In the meantime, an ACP card will give

you little performance increases if any at all. This is one technology that looks to be very promising and has tremendous potential, so keep an eye out.

For more information on ACP and its technology, check out these links: <http://www.datacube.com/price-support/price-support.html> and <http://www.bcp.ca/price-support/price-support.html>.

## Our tests

We added vendors to send us machines equipped with either 266 or 300 MHz Pentium II processors and 44 MB of RAM. We left the remaining components up to their bid, but there we were looking for systems that we could use for testing.

What we got was back-breaking and no printing. A few vendors opted to fix their systems with DVD drives and CD accelerators, which often chose to keep things simple. Many systems arrived late this month as vendors were anxiously waiting for their systems to ship. Then the latest 4403X motherboards. Unfortunately, a small number arrived too late to be included in the survey. Those include Intel, PPT, C&G and Dell. Look for a brief follow-up to these machines in the December issue.

We ran the BPC's new board with all machines running Windows 95 and set to a resolution of 1024x768 at 16.7 million colors with the exception of the IBM machine, which was run at 640x480 colors due to its 2 MB limit on the video card.

## The contenders

## A Open

Comprehending the A-Open series as well known at TCP Labs for offering good performance at very competitive prices. This month the system we tested looked a few of components using the same technology.

To test, we have a Pentium II CPU operating at 266 MHz, which sits on a newly released AcCyber 4500 motherboard with an ATX form factor. The board is based on the 486LX chip set from Intel. As requested, the machine was equipped with a healthy dose of 64 MB of high-speed SDRAM.

Speaking of high speeds, this A-Open system was configured with the new Status Multimedia II AGP video card. Although not available in the public at the time of this review, the pre-production model is the machine is a good indication of things to come from ACP technology. With 8 MB of dual posted VRAM on board, this card offers excellent 3D graphics at resolutions that will easily meet the needs available only on CAD/CAM professionals.

Storage components include a 5.4 GB Quantum hard drive with Ultra DMA support and a 36-CD-ROM floppy drive. Multimedia II is delivered with the help of a 34x CD-ROM drive, an IBM APT5000 hard card and a copy of Autodesk 1400 version 3.0.

Also included in the package are an Acer AL1201 monitor and an Acer 4224 mouse and a programmable keyboard. One of the most interesting features of CAD/CAM activity and calling up the Windows 95 calculator at the press of a button.

Although the system was one of several which showed good performance with the Deliberate position of our benchmarks, it still managed to produce good results for a machine in this class. The system is priced at \$1999 and costs a few more parts and labor warranty is should be noted that that price tag will vary once the prices have been established for the new Status AGP video card.

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To make the system complete, there is an internal floppy disk drive and an NEC C700 33-MHz monitor. Micromax's Office 97 Small Business Edition is also part of the package and includes Excel 97, Word 97, Publisher 97, Outlook 97 and Small Business Financial Manager. This entire system is very aggressively priced at \$3,799 and comes with a three-year warranty.

### STD



If you're looking for a Pentium II system that won't break the bank, look no further. This system from STD is packed with everything you need and then some.

It features a 266 MHz processor on a new QDI motherboard with the new 486LX chipset, 64 MB of SDRAM, the latest ATI Rage Pro AGP video card with 4 MB of SDRAM on board, an Opti 9156 sound card with 3D sound, a Quantum Revolution 4 GB hard drive with Ultra-DMA support, a Treewave 24x CD-ROM and a Linklayer 56Kbps Modem.

Software titles include 96 Communications II and the Microsoft Plus Pack for Windows 95. This was, strangely enough, one of only two machines in the 266 MHz class that made it all the way through the benchmarks without any problems. With a price tag of only \$2,799 and a three-year warranty, this one is hard to pass up.



### Editors' Choices

**Performance Pentium II 266 MHz class**  
**Express Micro**  
In the 266 MHz class, the performance per dollar is the best machine we tested for.

The fastest machine goes to Express Micro. With an overall score of 284 and a slew of everything but the best components, this is the machine you'd want to take home with you.

### Performance Pentium II 266 MHz class

In the 266 MHz class, the performance per dollar goes to another clear winner: the NEC Directia EPL 266. It offered the best performance for its processor class, and it is an exceptional value when you consider everything included with the system.

### Price/Performance STD

The system from STD offers the best performance for the money. Priced at \$1,799, it has great components, but no problems. Bringing the benchmarks, and would make a fine addition to any desktop.

### Ultrix



This month's system from Ultrix offers good performance, and a nice mix of components. Powered by a 300 MHz processor on a 486LX motherboard,

the system features 66 MB of high-speed SDRAM, a Micromax Millennium video card with 4 MB of VRAM on board, a Quantum Revolution 4 GB hard drive, a 24x CD-ROM drive from Treewave, a 33.3 MHz microchannel, and a 14-pin 15.1 GB internal unit.

For multimedia, there is a pair of 160 Watt speakers and a 48KHz sound card with

Creative Labs' Sound Blaster AWE32 sound card to deliver superb sound. This machine is also network-ready with an Intel EtherLinker Pro100 network card. This was yet another machine that managed to make it all the way through the benchmarks without getting into any trouble along the way. It is priced at \$4,435 with a three-year parts and labor warranty.

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## ■ SOFTWARE

# Microsoft rolls out NT 5 beta

BY GEOFF WHEELWRIGHT

SAN DIEGO, Calif.—Microsoft took a major step toward the evolution of its Windows NT "Industrial grade" computer operating system in late September, announcing the first beta pre-release version of Microsoft Windows NT Service Pack 3.0 and Windows NT Workstation 5.0 operating systems. Copies of the software were handed out to the 3,200 developers in attendance at Microsoft's Professional Developers Conference here, and to key corporate customers and 200,000 developers.

The software, which will not be general by available until 1998, promises to reduce the cost of ownership when managing "enterprise" (for company-wide) computing resources. Microsoft aims to accomplish this by building into Windows NT 5.0 a number of tools that allow companies to bring existing, upgrade and manage the activity on their computer networks. It is also designed to fully exploit the capabilities of recently announced, lower-cost PentPro and Windows Terminal computer systems being promoted by major PC makers, such as Compaq, Hewlett-Packard and Wyse Technology.

According to Jon Sorenson, research man-  
ager for U.S. market research firm

International Data Corporation, one of the keys to the success of Windows NT 5.0 will be its ease of installing computing environments. "It seems that at a time when information technology resources are being squeezed and reduced in many companies, NT 5.0 will enable a small or medium-sized system administrators to do more work and take care of more users," she said.

The developers of products used in corporations—such as SAP, which is a leading player

in the manufacturing software sector—the target of the new release is expected to be particularly impressed. "Windows NT 5.0 is the most significant operating system release ever for us as a developer," said SAP vice-president, Rüdiger Heine. "With all of the new services that it delivers, there is something to make desktop servers, we can build more powerful applications much more quickly. Our customers will benefit from getting new application functionality together

with reduced cost of ownership, at the end of the possible time."

Microsoft said it expects to continue strong growth in its corporate computer operating system sales. The company reported that shipments of Windows NT Workstation have increased by 177 percent annually since its release and that in the past six months, computer makers have more than doubled the number of machines on which they packaged Windows NT Workstation. □

## Microsoft explains Win 98 delay

MS—Microsoft's announced delay of a next version of the its Windows operating system, Windows 98, may have shocked that crowd, but Microsoft says the decision to delay does not mean the company is having problems developing the product.

"First, we want to say Windows 98 never had a general shipping date of February 1998. We always said we planned to ship Windows 98 in the first quarter of 1998. Now we are saying we will ship Windows 98 sometime in the second calendar quarter of 1998. By June '98," a company spokesman told reporters.

"Secondly, it is important to understand

Windows 98 will ship as an upgrade to Windows 95 and Windows 3.1," continued the spokesman. "What we are saying is that we have delayed the Windows 98 upgrade until we have completed the Windows 3.1 upgrade, so they can both ship at the same time. Only the Win 95 upgrade was going to ship before the Win 3.1 upgrade."

Asked if late testing of the Windows 95 upgrade caused problems that contributed to the delay, the spokesman replied, "No, that is not the situation. We are pleased with the progress of the Win 95 upgrade and we have not been confronted by any problem which would cause a delay. We want our users to know this

announcement does not reflect problems with the development of Windows 98."

Computer industry analyst and publisher of the *Citigroup Technology Street* column, Michael Murphy, agreed. "I think Microsoft delayed Windows 98 for the reasons they stated. They want to ship all of Windows 3.1, by combining both upgrades to ship at the same time, they have a better chance of accomplishing that goal."

He went on to say, "In the long run, they want to kill off Windows 95 also, but I think that will come with a next version of the Windows operating system, which will be an integration of a standard desktop version of Windows and Windows NT." —David McDevine

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\* Best Deal of the Month





## KIDS

# After the report card

## Educational software that helps students make the grade

BY JEAN ALLEN-EKESON

The back to school routine is built. The kids come and go speaking of Michelangelo, decimals and exponents. All is well until they come sliding in with that first report card. How can you tell by their faces that a few minor adjustments need to be made. Or maybe they just need a boost in general skills, such as typing or reading, or a few handy references to get them started on projects and reports.

A few years ago, the best software to give your child a boost was designed primarily for the personal or Grade 7 crowd, but now, and more good products are arriving to help students in Grade 1 to college levels.

### Type like a pro

**Read, Write and Type**  
From Learning Company  
Price: \$22

**Jumpstart Typing**  
From Jumpstart Adventure  
Estimated cost: \$45  
**Marie Teachers Typing 2**

From Bonanza  
Price: \$45

**Marie Dunk Typing**  
From Marie's Books  
Price: \$20  
**Typing Tutor Deluxe**  
From The Education Software  
Price: \$20.95

The three Rs of education have a new sibling that is an essential skill in the computerized world of today: typing. Ten finger typing skills are essential for productive schoolwork, and you child is no exception. Like it or not, hand and foot, just isn't good enough anymore.

Five years of age is not too early to start on the path to mastering the standard QWERTY keyboard. Children this young can learn key bounding skills with clever programs. For Read, Write and Type available for Windows or Macintosh, it teaches children to type as they learn letter recognition and reading skills—it even clips in some phonics crutches. With this program, they have the letters on word, see it on the screen, keyboard and type it on their own keyboard.



Each monkey hearing, seeing and doing windows show they are learning.

Jumpstart Typing is the newest in the Jumpstart series of curriculum based software aimed at the Windows 3.1/MS-DOS 5.0 Macintosh. Like many educational titles, it is built around a non-personal, kid-friendly type game. Kids must sharpen their typing skills to win an Olympic style competition. There are plenty of supplementary educational drills with lots of type and graphics. It begins with a speed test and then concentrates on a few letters at a time and a speed is achieved with each set. The levels look similar to what typing teachers used to test us with a metronome.



Marie Teachers Typing 2 for Windows 3.1/MS-DOS 5.0 Macintosh uses keys to manage letters through a video game-like interface. It is easy to get into—a instant teacher with feedback.

classroom time will appreciate. First, children are presented with a dancing keyboard with animated sequences to demonstrate finger positioning. Then they start practicing five keys, each stroke begins and begins to move along two cartoon hands, children watch, fingers need to be used and if too many mistakes are made. Make to repeat the routine. Once the 10 keys in the next routine. After three or four plays, students move on to customized levels of typing practice.

This program introduces game and practice units, then typing, back and forth between the two. Teachers should use this drive approach. Assuming rates of 10, 15, 20 to 14, but older kids probably need more practice typing words. However, this is a good place to start.

Marie Dunk Typing from Creative Windows for Windows 3.1/MS-DOS 5.0 Macintosh uses a booklet-style paper format. This is a nice and well-designed manual with loads of exercises for reading and writing skills.

Children can spend as much time as they like working on free-key combinations or move to their higher levels that use the entire keyboard, or on to typing around, just type in a text with typed text. Also useful for use.

Continued on page 108



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## ■ TRAINING

# Tools for creating on the Web Web site management software

BY LINDA RICHARDS

With its third incarnation of our web site Web publishing tools, Advan+ has taken the Web to new heights. Now, Advan+ is not only a web site creation tool, but also a web site management tool. Advan+ can be used to create a web site, and then to manage it.

There's more to creating a web site than simply making beautiful graphics and the HTML files to drive them off wire. Though these things are important as well, what you find after enough Web pages are added, however, is that without the proper thought and planning, your web site may never see the light of day. In fact, this is a trap of pages with no visible signs. After the latest wave of Internet tools, the management tools are the ones that are most often overlooked. It's not just the tools that are most often overlooked, it's the tools that are most often overlooked. It's not just the tools that are most often overlooked, it's the tools that are most often overlooked.

and my idea of managing a Web site might differ, neither of us are likely to disagree on the fact that all Web sites need some type of management.

Below you will see and hear the latest tools, however, give some thought to your Web site—the Web site you'd like to build. What aspects seem to need management? What parts of it seem to be the most important? What are the web pages? It's important to give the same thought before purchasing, because the tools available approach the answer in entirely different ways.

## A for instance

My personal Web site started as one page in 1994. Just a single page with a short bio of me and my picture. Obviously, at that point the last thing I was thinking about was managing it. As I posted there are over 100 pages connected to my personal Web site, though that first little page is still there, which is a slightly different claim.

The thing has grown and grown with it, the planning on my part.



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## ■ TRAINING

and not much driving it besides the occasional shakedown of the saying, "Oh, maybe I should add this." \* and then setting off in a mad dash of temporary activity. There has been one major plus. Not even my old desktop in its dot-matrix era that, Arg-um, Web site at last—there has been one last thought given to man-

agement or maintaining the thing. It just grows.

The results of this lack of management show in the pages. There was a jang and coffee table in that to the site. My index is kept edited enough that there aren't any dead rats but there is a whole lot that could be better and I'm a content to let it be as long as my

side pages. I know that some of the offline links I've specified is some of my older pages no longer work but—since it's a personal page—I'm not really concerned because these don't change them.

From Ah! desktops—online browsing when it's available from cheap mouse and from some of the other sites I've designed—I realize

that the type of management I need is fairly painful. I don't want a management tool that's going to control the whole thing, but I do want to be able to get it there, change one thing and have it change a bunch of things. That said, it's important to remember that your needs might be very different. There are all sorts of Web site management

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## ■ TRAINING

tools available. Some of them will hold your hand gently and prompt you to do your management stuff with a very gentle voice. Others take a more "in an approach and will put a lot of the management updates right out of your hands. Some can slowly drag you out of the gate, or in leaving and it has a doubtless really be interpreted by anyone

looking at a computer screen. It's really a lot more than that.

Let's look at some of the options and we have the next up. However, though, that the little word up of products is not really meant to compare and against the other. At present, this has management software comes very different from one page of the last.

#### Microsoft FrontPage

FrontPage WebSite is a system requirements: 486 or higher processor, 1 MB of RAM (1.5 MB with) 30 MB of hard disk space, Windows 95, Windows NT or Windows 3.11. For more information, see the Microsoft FrontPage WebSite at [www.microsoft.com](http://www.microsoft.com). Price: \$59. Microsoft FrontPage WebSite is about \$59.

approach to Web site management. Right out of the box, and from your very first page, FrontPage has you thinking about your whole site, not just the individual pages and places that it contains.

Add that a lot of Microsoft software these days, if you don't know anything about managing a Web site and you

24



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## ■ ONLINE

# Battle of the Web browsers: Round 4

BY SCOTT SWEDORSKI

It's browser war time again. Since the every few months the showdowns roll up to do battle. While each browser has its shuffling armies, most of us sit in the middle of the fire, bewildered by the features and choices, waiting to see for one reason or another who the clear winner is. One caveat: once the dust clears, both have their share of usability issues, granted from this magazine so that Web-site-browsing is as confused as ever.

## Internet Explorer 4.0



Free Microsoft  
<http://www.microsoft.com>

**Pros:** Microsoft has rolled out a beta version of Explorer 4.0, and it's helping one feature: the Channel Outlook, Dynamic HTML, and an integrated desktop browser. After you download this multi-empire monster (4 to 22 MB), it might be a good idea to read for the CD-ROM, which is available for the cost of postage; you may be slowed by the changes to your desktop. Explorer 4.0 is not just a browser, it's an extension of the Windows 95 desktop.

You'll see a Start Page that will be displayed only once, to help you understand the features of your new browser. The next time you click the Home button on the toolbar in your browser, you'll see the regular edition of the Internet Start Page Web-Home Microsoft.com. The Start Page is a good idea for new users, but the power user might find it a tad confounding. The rule goes to new users on the Start Page has not altered into the program itself. However,

by logging on the Web and the desktop, Internet Explorer makes your desktop look



and function like the World Wide Web itself. And Go and Finders streamline the browser. Your Favorites menu becomes a folder on the desktop; you can add an address box to the task bar or the desktop, also which you can type a URL without first opening the browser. You can customize your desktop, the toolbar, the Start menu, and your folders in many ways.

Check your email or catch up with what's happening in your favorite group by using Outlook Express, an e-mail and newsgroup program based on open Internet standards. If you have existing e-mail messages or address book entries in another reader, Outlook Express can automatically convert your existing messages and address books entries. The new command compiler is another handy feature. It automatically works you have pointed before. Place your cursor in the address bar, start typing a URL, and it completes it for you.

If you are a new user, and are not accustomed to tweaking your configuration or, arguably, or if you have exotic software and peripherals, you may want to wait a few weeks until the final code for Explorer 4.0 is shipped. One of our readers encountered

increasingly more crashes until it became necessary to reinstall Explorer 4.0 altogether—also possible is not readily easy to reinstall, it again. Others have had positive experiences but simply don't like the browser's style interface; the changes take some getting used to, especially in the File Explorer, where files tend to open when you click on them once instead of moving or copying them a lot of a headache.

## Netscape 4.03



Free Netscape Communications

Web site: <http://www.netscape.com>

Price: \$29.95 (web site)

Netscape has released new versions of Navigator and Communicator which stand for a reasonable \$29.95 with a whole Netscape's "push" feature is called Netscape Web Content Manager to Explorer's channels. The 4.03 version of Navigator doesn't improve usability and browser performance for any browser combination, but this \$24.95 version download is an option for those in "big is not always better." The options, play the add-ons, steps and downloads are set up to be refreshing at times. Of course, that isn't the power users, who will need their own power Communications.

The redesigned Navigator 4.03 has new icons, a customizable toolbar bar, and a revised menu. One of our users found that there seemed to be some bugs in the display with scrollbars occasionally disappearing, and beyond another. Navigator also made some changes to the extension and set up

features to use computer that require some tinkering to re-enable. More tweaking for the advanced user, but a bit of headache for the beginner.

## And the winner is...?

Communicator/Navigator is the clear choice for the power user with online game changes to pay the growing fee, and Explorer wins with those of us with desktop games who need a helping hand, more often. It wouldn't be fair to express a preference myself, so I think most folks will end up supporting or liking with their current browser because they are already used to it.

Some will simply download both and switch between them until they establish a preference by force of habit. Both are still in the beta-testing phase, and there is no stable application that makes either browser a "have to have" at the expense of the other. Both offer excellent value, and both promise to be around for a while. I'll wait until the next upgrade match in the upgrade cycle. Netscape and Microsoft would both be well advised to bury the hatchet, and focus instead on improving ratings, making our next offerings faster, and smaller with improved help files.

Web site companies pushing open extended the channel concept design is looking very good for independent channels are really the future of the Web—most of the action behind the channel Web are by profit makers, down by the enhanced multimedia capabilities and improved structure of the channel format. And more will be done both by the content (CNN, Disney, and TV Guide to drop some names) and by the speed and improved organization of the channel interface.

While both browsers promise a lot, they really fail to deliver the content just yet. Most of the interesting channels are "coming soon." □

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## ONLINE

## Diana, landmines and amputees

Tragedy shines light on Web's role as forum for sharing information, ideas and grief

BY IAN GREGSON

The vast majority of Canadians aren't deeply saddened by the recent death of Diana, Princess of Wales. Although only a minority of us had actually met Diana, most of us felt her loss through the very media that supposedly overwhelmed her unfortunate death. However, for a considerable number of us, we experienced the loss of Diana through the Internet.

The death of Diana is probably the most significant event the Web has yet experienced. The number of Web pages that popped up in tribute to her was amazing. I told back the September edition of *Aspen*—an online magazine for amputees I started in June 1996—for 24 hours in order to write a tribute to the princess.

The Royal Web site (<http://www.royal.gov.uk>) received over 1.8 million hits in one week, with 350,000 people sending condolences through an online form. With so many people responding to the Royal Family through the Web, we represented ourselves in a way previously unheard of.

One person help leading that the Web played an important role—11.8 million hits to a web site is a staggering amount of bandwidth. This "connection" between the web and the British proved to be an incredible tool for spreading our story, especially for those of us outside Great Britain.

#### Taking survivors

My report and stories in *Aspen* resonated dominantly when the Internet sounded in the September issue. Her breakdown and ultimate ending for technical reasons touched me as a person with an important loss. It was as if we were the woman who lost her.

My indirect connection to Diana was through the Web. The very first issue of my online magazine featured an article by Colleen Tybirk of Johns Arden, Canada. This topic was addressed again in other issues as January '97. I also found an interview with Anne Sturges of the Canadian Survivor Network, and in May an article on Diana's visit to Angola. Every image captured from the BBC documentary to appreciate the fact Diana's visit to

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The Amputee Web Site

**TO SURVIVORS**



The Amputee Web Site

Angola brought back her and Diana together. She may recall the footage and interviews with her, a double blow to a woman who could Diana around her.

The Web has also played a pivotal role in some of Diana's "crises." Communities that were particularly groups that were trying to raise awareness about the plight of landmine victims. By sharing about this information through the Web, it may have helped the landmine issue to the world's attention far more quickly than by conventional media. The Web connected individual landmine victims and brought the landmine issue into world consciousness.

And landmine activists around the world recognized the importance of the Web and email in their work. In doing so, they showed us the Internet as a tool for immediate availability to everyone, particularly the traditional media in Diana's subject to impact caught world attention.

As an example, when Action Canada (MAC) sent its letters asking for its database up-to-date volunteers on the day volunteer on landmine. For me as an individual writer, there is no better source of information than the Internet. I don't provide a website through which we don't have to deal with unwanted e-mails or compare with the latest landmine issue. The Web will do much to finally end the landmine problem, as Diana because the focus of world attention in December for the signing of the world treaty on landmines.

#### Changing lives

The results of the landmine issue being called in international attention has been a positive for the survivors of landmine explosions.

Anglia has a population of 30 million, most of whom don't have phones for local computers. For however in the developed states as is immediate contact, we can encourage others to give us a challenge that try to improve the quality of life for the average Anglian anglian.

Anglia has the highest population of amputees in the world. One in every 300 people has a limb loss of some kind through landmine explosions. The greatest loss looking to Anglia is still playing "catchup," but that day is

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## ■ ONLINE

## Weaving your own Web site

Continued from page 116

<TABLE> tag is set of three tags. All the structure throughout your Web page to create a table of contents.

An alternative method of arranging the table is to better divide up the two columns of the previous table into vertical fractional cells. This arrangement is ideal if you want to add subject headings within a column on your Web page. The following table example shows a simple table containing two columns divided into three rows.

```
<TABLE>
<TR>

<TD WIDTH=100%>
All About Oranges
</TD>
<TD>
Oranges Make Much More
</TD>
</TR>

<TR>
<TD WIDTH=100%>
All About Apples
</TD>
<TD>
Apples Make Much More
</TD>
</TR>

<TR>
<TD WIDTH=100%>
All About Bananas
</TD>
<TD>
Bananas Make Much More
</TD>
</TR>

</TABLE>
```

The code may look a bit complicated, but the underlying structure is simple. Essentially the table is divided into vertical

widths. The first table data element and the content in the second. Each row contains two table data elements of which the first cell is each row's subject column that is 100 pixels wide. Taking this structure, the table heading will always appear alongside the content it pertains. To add some further information, add <TD WIDTH=100%> to force the subject heading text the content alongside it to appear at the top of the table cell.

## Adding up your tables

Some more experienced Web authors will immediately see a problem with the <TD WIDTH=100%> code used in the previous two examples—it only tells the browser to set the width of that cell (and the column it created) to 100 pixels in width as long as the viewer's browser window permits it. If there are some large images in the right-hand column as the viewer's browser window is very narrow, you cannot guarantee that the column will fit in at 100 pixels.

If you want to "fix" this column to place your items in a more consistent way, you will have to fix the dimensions you want. There are two possible options: use an image in one of the non-linking space elements. If you insert an image that is 100 pixels wide in the first column, it will ensure that the contents of the column are never less than 100 pixels wide. You can also use a long line of non-linking spaces by using the character entity <nbsp; which equals the width you desire. This is broken and less precise, since the size of the non-linking space depends on the font size being displayed, so it is always a good idea to use the <TD WIDTH=100%> tag when using this approach.

Next to ensure that your entire Web page cannot be scrolled by the user, so that every thing is visible is fixed is plain? All you have to do is to make both columns on a specific row and then ensure that table width another table of a predetermined size. In effect, making the table to be displayed at the desired size specified in the larger table there is some sample code that demonstrates the idea.

```
<TABLE>
<!--beginning of the main table-->
<TR>
<TD WIDTH=100%>
```

```
<TABLE>
<!--beginning of the inner table-->
<TR>
```

```
<TD WIDTH=100%>
<!--column one-->
<IMG SRC="banana.gif" HEIGHT=100
WIDTH=100%>
<!--an image of Bananas that sets the
width of the column-->
</TD>
```

Continued on page 122



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## KIDS

### After the report card

Continued from page 107  
with a few letters, words are used. As children keyboard with finger placement through the proper finger and key strokes. Although it is used for ages 10 and up, many eight- or nine-year-olds would also benefit from this program. While it is a keyboard for most, both male and female players are used.

There are also many features that make this a better choice for parents and more useful as a keyboard that shows which letters the student is having trouble with and which have been mastered. And numbers, capitals and symbols are introduced from the beginning. The first few minutes of instruction point out the advantages of using 10 fingers versus two and how to use the capital letters with key to guide and copy capitals. This program should also work at home, where self discipline is needed to progress, because it is as much fun as I have been trying to convince my 12-year-old to learn 10 fingers. Depending on several pieces—perhaps this program is the key.

For a complete but more traditional typing tutor for older kids, try Typing Tutor Deluxe for Windows 3.1/95. It is an extremely well equipped, step-by-step tutor that offers lessons on regular typing skills and 14-key numeric keypad. Such keyboard skills must be practiced. An occasional public school student with huge placement during the lessons. To make it more interesting for younger kids, progress to type have been included from such classes as Snow White,

The Wizard of Oz, Oliver Twist and Robinson Crusoe. There is also an advanced jump-style adventure game called Snake-Type.

This is a full featured program that provides as good a course as typing as you will find anywhere. All you need is a little discipline.

### Rev up reading speeds

#### Ultimate Speed Reader

From: Cambridge  
For: Windows 3.1/95 and Macintosh  
Price: \$39.95

When it comes to Grade 4 or university reading, most agree with John Cunningham that it is an art in itself. And to the more common Denison with the release of Ultimate Speed Reader. Don't expect graphics that wow this program definitely means business and gets you to work, breaking your reading speed. The program has two modes: reading and listening. The latter allows you to read continuous paragraphs to read with appropriate comprehension questions. Teachers might want to use this feature to assist lecture paragraphs for middle school children as the reading tapes are oriented to at least high school level.

However, not all students are reading paragraphs. Some need you to imagine pictures or groups of random letters quickly. The program starts with a sample paragraph and questions to test reading speed and comprehension level. It then constructs a customized

program that builds from the reader's tested speed level. Answers are automated and tested through the testing, but performance will improve reading skills.

A strong addition to this program deal. I would like to see it be an online coach, similar to those available with chess, tutor software.

### Basic research

#### 1996 Canadian & World Encyclopedia

From: Macmillan & Stewart  
Price: \$19.95  
Encyclopedia Britannica  
From: Encyclopedia Britannica  
Price: \$22.95

No one remembers everything they learned in school. Thus a good educator should also teach you where to look and answer what you want to know. Kids are being taught research skills as early as Grade 1. By the time they are in middle school research will have become an integral part of their daily projects.

While the Internet is tempting as a place to start, a good encyclopedia with a little search engine will provide ideas and structure that can then be supplemented with the Internet, library resources or interviews.

One I have looked to Grade 3, the revised CD-ROM research tool is the 1996 Canadian & World Encyclopedia (for Windows 3.1/95 or Macintosh). This year's version has been expanded to two discs and combines world and Canadian encyclopedi-

as dictionary, thesaurus, French-English dictionary and monthly latest updates. Also included are features of video clips, cell animation, maps, graphics, virtual views of famous locations and a Canadian quiz (test to show you how much you need to use the encyclopedia).



I have to be honest, I have a love affair with this program. The search engine is useful to type in an entire sentence in question form just like you would ask a librarian. The program is easy to use and lets kids cut and paste text entries into a clipboard that makes writing research papers a snap. And in no other CD-ROM will you find as much information on Canada. The general world education is quite good as well.

What I was in school and wanted quick but detailed information on an obscure topic, I looked to the school library and Encyclopedia Britannica. When the library came down to door we would all say:

Continued on page 122

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## ■ ONLINE

### Worring your own Web site

Continued from page 119

```
<td>
</td>
<td colspan="2">
<img alt="My Friend.gif" height="100"
width="100">

```

Here is an example of text that specifies the width of the column:

```
<td>
```

```
</td>
```

```
</td colspan="2">
```

```
</td>
```

```
</td>
```

```
</td>
```

```
</td>
```

```
</td colspan="2">
```

```
</td>
```

```
</td>
```

```
</td colspan="2">
```

```
</td>
```

```
</td>
```

So what you end up with is a table with as a table that will appear the table to the viewer, no matter the browser window size. The outer table is set to the sum of the sum of all the two columns: 560 pixels. The outer table is necessary because while the layout in the column may not be second at the viewer's browser window, other elements will not fit through to a lower degree than if the layout were not there in the first place. The outer table creates the overall web page to the desired size—no account

or resizing the browser display by the user will change the width of the web page display.

There is a lot more that can be done with some (advanced) HTML table code—explore some for yourself and you will find that tables to be an effective way of laying out the content on your Web pages. ☐

### Next time: Builders with character

John Schepel-Adams welcomes any comments, suggestions or ideas, and promises you may have. The page read left is a long-forming form. He took as HTML, The Advanced HTML, Schepel-Adams 2010 2010-2010-2010, a website in Internet. Personal interest in the area can be found at The Computer Paper web site at <http://www.bcp.ca>

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## KIDS

## Klinton on Disney

Continued from page 124

The program is well crafted and really quite pretty. You would expect some of the animation quality there was clearly an outgrowth of the graphics.

My daughter and I also enjoyed Disney's *Headless Horseman* from Studio. The various times that can be printed include name tags, placemats, notepaper, buttons, stickers, disk labels, banners and so on. (Note: the box says this program is installed with a black and white printer, but that does not work.)

The program is all right, but Klinton gives it a 3 and I give it a 3.5. The interface is green and lack of flexibility contributes to the user. The color schemes and fonts accurately reflect those in the movie, but so what. The box doesn't come with any paper products so you can't really do much with you go out and buy special paper. All in all it is a nice little first step. The selection of a few Disney stickers pages or some nice-out pages would have made us happy. As it is, *Headless Horseman* doesn't make the mark for either the *Disney* banner or the *Disney* brand.

## Ready for Math with Pooh

From Disney Interactive

Windows/OS/95 requires any Windows 95 or Mac OS 7.1 or newer and  
 General minimum: \$29.99

Ready for Math with Pooh is another Disney children's CD-ROM. This one is aimed at three- to six-year-olds and is very



friendly. The rich scenes are populated with the lovable characters from the *Winnie the Pooh*. The scenes are primarily sight and say the nice things. The different locations offer simple games that teach addition, subtraction and sequential numbers—multiplication and division are left for another program—and there are three levels of difficulty.

This program is really aimed at the three- to four-year-old crowd. My six-year-old-son (I'm old enough to tell this to say)

"I think Ready for Math with Pooh is a little bit young for me. I think that *Headless Horseman* story book is more my age but I think that this one would still be pretty fun. But I think it is kind of funny that they give you the *Winnie the Pooh* but you can't even see it. [Our exercise involves helping Tigger get rejected from]

Continued on page 128

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## BOOKS

# Home sweet home page

## Web enabling the far flung family

BY KEITH SCHENGLI-ROBERTS

### Home Sweet Home Page and the Kitchen Sink

Author: Robin Williams and Sam Mark  
Publisher: Prentice Press  
ISBN: 0-201-05503-4  
September 1997 pages: 190  
Price: \$24

Have a far-flung family but want to keep in touch? Well, if everybody in your family has an Internet connection, then an even easier solution exists today—why not build a Web page or two creating their going on. That's the idea behind *Home Sweet Home Page* and the *Kitchen Sink*, which teaches you how to make Web pages with the purpose of communicating with the rest of your family, but Web-enabled family.

Co-author Robin Williams, one, and Sam Mark, a wonderful writer who has written over a dozen computer books, some of them classics, like *The Little Mac* and *The Mac* is not a lip-sinker. The book is a truly charming story about computers, an easy way to do—first, someone manages to explain some of the most complicated things about computers, and in this case the Web, in a disarmingly simple and straightforward way.

This is very much a beginner's book—it begins with the very basics, like how to access work, and gradually works its way up to more complicated matters like how to get a Web browser and how to begin writing your own Web pages. Things are made very simple and even the most computer-phobic will find this an approachable book on the topic of getting onto the Web.

Williams has also written several computer-oriented books that look at style, and this book is no different. If you follow some of Williams' and Mark's simple design rules, you



will not only be able to create a home home page but be able to look one that doesn't look like it is just a basic home page.

The CD-ROM that accompanies the book comes with a "connection kit" to help the beginner get onto the Web as the first place comes with some simple Web-page building tools and has a few family from Williams and Mark created so you can make your Web page more distinctive.

Whether or not you want to keep the lines of communication open with the rest of your far-flung family, or simply want a pain-free introduction to making your first Web page, *Home Sweet Home Page* and the *Kitchen Sink* is a very fun and funny book that will help the absolute beginning Web-author get a good start. □

Rating: Information content: \*\*\*\*  
Readability: \*\*\*\*  
Interest level: Beginner  
Overall Rating: \*\*\*\*

Contact: Addison-Wesley Publisher (at 414-447)  
2001 Web site: <http://www.awcnet.com/>

# Basics for would be

## Internet entrepreneurs

BY KEITH SCHENGLI-ROBERTS

### The Geek's Guide to Internet Business Success

Author: The Geek  
Publisher: Jossey-Bass  
ISBN: 0-440-05503-2  
September 1997  
Price: \$24.95

One of the little-noted impacts of the Internet and the Web-going customer is the fact that it has opened up white area potential in job markets. It has opened up the market for entrepreneurs who want to set up their own Web services, has created new jobs for Web mastering, and new opportunities for people in established careers, like graphic artists designing for the Web and systems administration who keep all of the servers humming along as they should.

All of these new fields have been caused by the rapid growth in the Web and the desire to use it for commercial purposes—but not everybody knows how to go about making it a career choice, or how to run their existing skills to a profitable Internet-based business. If you want to become an "Internet Professional" then it is probably worth your while to take a peek at this book.

The *Geek's Guide to Internet Business Success* is designed to tell people who are interested in making the Internet their career and give about telling you how to become a successful entrepreneur in the field. It looks at the possible career opportunities available and how to build a business around your personal strengths and weaknesses. A lot of the material in this book covers the sort of material you would find in a few self-studying business books, how to set profitable rates, how to look for business

opportunities, finding and managing personal work, working with strategic partners and how to plan for the future.

What makes it different is that the book is aimed squarely at a new audience that may not have much experience with the business end of things and is in need of a hand. It also covers a lot of the basics like writing a business plan, strategies for finding clients, standard billing practices, etc., but it all comes from a highly practical perspective—the type that comes with expert advice—this would be Web-entrepreneur well appreciate. Author Rob Schenkl is the president of a marketing firm that has been selling online for over 10 years, so he knows a lot of the special do-and-don'ts that come with the field, and the audience he is writing to.

There are many topics covered here that any Web-entrepreneur will want to know, like how to set rates, online public relations with clients and public, and the sort of questions to anticipate from a prospective client—and how to answer them. If you are looking to set up your own Internet-based business, this book is definitely worth a look.

The book is aimed at an American audience, so some of the topics covered will be considerations or considerations of a business—clearly, necessarily, translate well, but the specifics of the Web marketplace covered in the book are in again from other more general business books of its type. Good rule! □

Rating: Information content: \*\*\*\*  
Readability: \*\*\*\*  
Interest level: Beginner  
Overall Rating: \*\*\*\*

Contact: Jossey-Bass  
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## ■ MAC ARENA

## Steve Jobs now Apple's interim CEO

BY JEFF EWANS

**A**t the first official meeting of Apple's new board of directors in early September, Apple co-founder Steven Jobs was formally appointed the company's chairman, chief executive officer (CEO). Jobs had for months repeatedly denied being interested in the job, on spite of his increasing involvement in Apple's day-to-day affairs and the thousands of e-mails in the Apple community.



Jobs, high public profile as an "adverser" in Apple management had come to dwarf the stability of any other Apple executive, especially since the abrupt departure of former Apple CEO, Gil Amelio, and other senior

Apple persuaded Jobs has once again become the public spokesperson and symbol of Apple, finding a new CEO with the intent to under-

rebuilding Apple as a profitable industry leader. On the order of Laszlo Greenan at IBM, Laszlo makes quick and easy jobs, access to the top job at Apple seems to be less a deliberate decision on his part than the result of the industry's weakness at Apple assembly (which is).

Since agreeing to assume an "advisory" role following the purchase of his NeXT company's technology by Apple early this year, Jobs has displayed contradictory attitudes towards assuming responsibility at the company that he started in a garage and from which he was ousted.

Jobs is said to have dumped the Apple stock he received as a part of the purchase of NeXT (initially a better time to divest him- self of Apple stock would have been after the announcement of his appointment as CEO, when Apple stock jumped sharply at the good news).

John Harris is a new, enigmatic star within the Mac-owning community, and his presence is a big boost towards mainstream confidence in the Mac platform. Although his appointment is a necessary caution to an ardently reality at Apple, it places additional pressure on Jobs to work smarter in the short term, and may make the search for a permanent CEO more difficult, as any would-be replacement for Jobs will have to deal with the shadows he cast over the company that has become his crux more than once: was a computer entrepreneur trapped within a prison of his own making, or is Steven Jobs, in 1997?

For more information, contact Apple Computer, Inc., 1 Infinite Loop, Cupertino, CA 95014, USA. Tel: 415 930 8300. Fax: 415 930 8301. E-mail: [apple@apple.com](mailto:apple@apple.com).

4000000 on Sept. 11 that are three months old. The Power Mac 4000 are now available. The 4000/150 and 4000/170 are the fastest models, and the 4000/120 is the slowest. All three models now have a 1.6-MHz 68030 chip, 256 K of DRAM, 800K of hard disk, and 100 MB of Drive. The Power Macs are priced from \$3,495 to \$4,495, depending on configuration, while older models, such as the Power Macintosh 4000/215 introduced last year, have had their prices slashed to \$2,349, in the case of the 4000/215. The new 4000 models follow on the second release of the Power Macintosh 9600/150, which, with its 150 MHz processor and inline cache, is claimed to be the world's fastest personal computer (estimated price of \$3,495).

In spite of Apple's well publicized difficulties, Apple Canada claims to be experiencing much very interesting trends, with its share of the Canadian computer market increasing above seven percent (compared to six percent in the United States), and continuing strong sales into the graphics, education and home computer markets. Mac OS II sold over 1.2 million copies worldwide in its first two weeks, indicating strong acceptance by Mac users.

In conversation with Adobe Canada's head, Denise Bolden, TLF learned that although sales of Windows versions of Adobe programs such as Photoshop, PageMaker and Illustrator are growing strongly, sales of the latest Mac versions of those programs set also increasing steadily, indicating the ongoing strength of the link to professional graphics.

Continued on page B4B

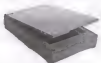
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Beit could keep Mac clones alive

**AUTUMN TALK (SII)**—Apple Computer may have effectively ended human-Macintosh clones, but not Macintosh minisubscribers. PowerTalk, Apple's new operating system (SII) from Red Hat, could carry a "Macintosh-like" clone into the future. The company announced a license agreement in September to license RISC in its current line of Macintosh clones.

For BeGS to effectively replace the CRG it will need a number of conditions met soon. First, more mature PowerPC applications need to be ported to the BeGS. CRGists at PowerTools suggest a developer in the line "as in the process of building a plug in to BeGS that would allow PowerPC applications to run without really porting." Second, BeGS needs to work with the Common Hardware Reference Platform (CHRP), the next generation of Macintosh architecture.

Since CHRP is an open specification, companies other than Apple can develop computers using the technology. The licensing problem with the clones is avoided because Mac OS X has CHRP, not LTPP technology.

PowerPC's chief executive officer, Victor Wang, told Sempronix there is a market of "CHIP machines for SoC" and CHIPSoC systems capable of running PowerPC applications could be a non-Archie supported chip, he said.

Wong continued: "We have heard from a lot of Mac users who are disappointed and angry with Apple about making Mac clones. That is why we are including the iMac now and will be happy to ship a clone with iMac as the main selling option."

In the United States, beginning Sept. 22, PowerBooks was scheduled to start shipping iMacG and Apple's Mac OS-X as packaged software from Apple. "By including a packaged version of Mac OS-X, our customers are entitled to full Apple support and services," added Wong.

PowerBooks began shipping "iMac G4" as a Mac clone in December. The company received an Apple G4 license as a sub-license to Microsoft's agreement with Apple. PowerTools prohibits direct sales of customized Macintosh clones.

A new line, based on a "much faster process," will ship from the company soon. Called the E Factor PPC, the new high-speed line will also ship with AcES—Patent Pending.

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## NEWS

## Jobs' keynote embraces publishing industry

BY PATRICK MCKENNA

SAN FRANCISCO (PC-123)—Apple's selection of keynote officer Steve Jobs' told attendees that 3,000 keynote attendees who Apple will do what it can to ensure that the keynote is as successful as possible. He closed the Macworld/SE speaking session 7:30 a.m.

Steve Jobs was getting 100,000 to 150,000 people to attend the keynote and told Jobs that he had to make the keynote as successful as possible. He closed the Macworld/SE speaking session 7:30 a.m.

After going back to the keynote to see them to share Apple's and Jobs' view he had to make the keynote as successful as possible.

His keynote about the future was equally tough. "We have to clean up the customer

experience," he said. "We are getting rid of partners that don't want to help and keeping the ones that do. I want you to leave the really good ones and the ones who want to help us." □



experience is our marketing campaign and technology to ensure publishing at all levels.

Seybold's Seybold 97 is an annual publication of 40,000 publishing executives and professionals, all of whom rely on and support Apple Computer. Jobs closed his address saying, "Eighty percent of color publishing is done on Mac. The guys are out there talking to us."

After 12 months Jobs returned to Apple. Jobs demonstrated a command and control of changes taking place in the market company. He addressed those in Apple's past saying, "Our products are not what they should have been." After taking a look at Apple's product line for about 10 years, Steve Jobs said that he was taking a hard look at that 10 years to see what he would be doing. "We are adding a new focus on design and publishing."

Jobs also demonstrated a command and control of changes taking place in the market company. He addressed those in Apple's past saying, "Our products are not what they should have been." After taking a look at Apple's product line for about 10 years, Steve Jobs said that he was taking a hard look at that 10 years to see what he would be doing. "We are adding a new focus on design and publishing."

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## MAC ARENA

# Interface, control enhancements for EMailer

BY PETER MILBURN

### Emailer 2.0

From: Clark Canada  
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Suggested retail price: \$69

For the majority of computer users plugged into the Internet email is quickly becoming the primary mode of communication. So it isn't surprising that my email traffic has grown from a trickle to a torrent in the last couple of years.

As a consequence, it hasn't taken long for me to outgrow the rudimentary features of the built-in mailer that's part of Macintosh Version 3.0. Simply put, Macintosh mail does not possess the management capabilities required by serious email users. (Sorry, but I won't use Message Communicator 4.0—its performance is slow and contains features I don't want.)

Enter the dedicated email client software package. The standard for email client soft-



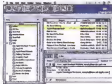
storing your address book, printing and more.

Another web-based challenge is support for hierarchical folders. In the left pane of the mail browser window you can create new folders or nest folders within other folders to suit your organizational needs. Unfortunately, you can't drag-and-drop a folder into another folder; you must use an advanced folder menu. However, you can drag and drop any mail file into a folder. To display the contents of a folder you merely click on it and the right pane of the browser window will display its mail content. For some odd reason I have decided to disagree with the browser window guidelines that were present in version 1.0. Hopefully, the next version will give first windows the same appearance as Mac OS 8 windows, since it makes it easier to follow the multiple windows list.

A feature that I find indispensable with EMailer is the ability to search your entire set of messages using a find command. EMailer now consolidates all your messages internally into a single file rather than multiple files as its predecessor did. This has two advantages: faster searches and conservation of hard disk space. Also a standard feature is the ability to spell check your messages. If you use other Clavis applications you'll be glad to know that EMailer shares the same spell-checking dictionary the reader in your system folder.

As you would expect, EMailer's address book supports single contacts or groups of contacts. However, its ability to import addresses from Microsoft's HTML address file is comprehensive, importing only words with no delimited text files. As you already have to rely on addresses' HTML coding, there isn't your own data. This is disappointing to power users and, among its experimental users, to Clavis should try to rectify this oversight in a future release.

A unique feature, however, is the support of two distinct mailboxes: mail servers such as AOL, MSN Mail and Hotmail! In name a few it also supports the ability to have multiple mail accounts. When you use



your list should become as big as the dirt and the Web site design software. There are now several options on the market that include Clavis Reader, QuikMail, EMailer and Clavis Software. QuikMail Pro, EMailer's closest claimant that it can "control any email like a god" so I decided to put that claim to the test.

### A new look

The biggest change that will be noticed by users of EMailer version 2.0 is a completely revamped user interface. Clavis is taking a cue from Adobe by implementing a matching look-and-feel across its product line. Reader now has a striking visual similarity to Clavis Designer. A floating button palette at the top of your screen allows you to quickly access commonly used features such as creating mail, replying, forwarding

Continued on page 112



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## ■ MAC ARENA

### Interfaces, control enhance for email

Continued from page 518

pie-time features with its ability to schedule emails and specify encoding for mail recipients. Finally, Mac OS, Unisync, Smailier does claim that it meets the needs of the average user.

### Advanced features

Smailier really shines by implementing sophisticated internal engines called mail actions—a fancy name for macros. Through the mail actions dialog box, a user can define a series of instructions that automate long or repetitive tasks. Actions are also capable of triggering mail actions, making the process of error-checking accessible to novice users. Examples of simple mail actions would be automatically filing incoming mail or automatically replying to an email message when you are away on vacation. In essence, if you have a dedicated Internet connection and you leave your computer powered on:

Mail actions are further supplemented by the support of AppleLink, Apple's unique system-wide scanning technology that is part of the Mac OS. Mail actions can trigger an AppleLink routine that further amplifies the capabilities of the software. Smailier comes bundled with several pre-built AppleLinks, one of which will make you hit your spin your virtual mail. AppleLinks can also be run independently of mail actions.

Last but not least, Smailier can be used to set up an Internet list server from within the application, a bonus to Web site hosts.

### The bottom line

Smailier starts going close to its claim of controlling your email like a god, but it still has a few rough edges that need smoothing.

Because of the lack of drag-and-drop support for folders in the mail browser window. At some point, I'd like to see tighter integration of Smailier with the Desktop. It would be nice to be able to move messages in folders that are part of the Mac Finder. Instead of within the application. Maybe the default PowerLite packages will be associated to a future Mac OS?

Also, importing address books from other mail programs should be made more painless. Users should also add more error-checking and adding methods for its rule-based mail actions.

But these complaints are relatively minor compared to the overall utility that Smailier offers. Clari has provided a real compact and fast email client that significantly enhances productivity. If you are in the need of greater control over your email traffic, then Smailier is worth looking into. Q

Contact: Dave Caswell, for 408-591-9071

Web site: <http://www.clari.com>

Price: \$1000 as a consultant with 1000 Systems Support located in Calgary, AB. His site is located on the Internet at [dclib.com](http://dclib.com)

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## ■ MAC ARENA

# Motorola quits Mac clone business

BY PATRICK MCKENNA

**COMMERCIAL** (S. 1996) — A year ago, Apple Computer Inc. treated an expensive licensing of the company's Macintosh operating system (OS) to Power Computing, IBM, Green Computers, and Motorola. In early September, signed to Apple's secret decision to halt the licensing of several licenses. Motorola announced the end of NeXT, computer system, the company's family of Macintosh clones.

In an official press statement, Motorola Computer Group, a unit of Motorola Inc., stated a "plan to discontinue its Mac OS-compatible system business in response to Apple's recent decision to limit the introduction of its new technology and phase out future licensing under the new plan, Motorola

NeXT system will be available for sale until the end of 1997."

A week before Motorola's announcement, Apple announced a US\$100 million acquisition of leading Macintosh clone seller, Power Computing. By the end of the week, Datas announced an arrangement to license Apple's latest OS, Mac OS 8, to current Mac clones.

Apple followed Datas' news release with an announcement claiming Apple had an intention of licensing Mac OS 8 for clones built on next generation Macintosh architecture, called the Common Platform Reference Platform (CPRP). Apple also mentioned the company would seek entry OS/2 systems built by any clone maker or provide technical specifications for cloning Apple's workbooks.

Motorola company officials held a teleconference to announce the discontinuation of the StarMax family of Mac clones. To replace current StarMax systems will be available until the end of the year. Nothing at what could turn into a fire sale, Motorola announced restructurings to a StarMax five-year warranty and extended telephone support from 90 days to one year.

Before Apple's close negotiations indicated Apple's desire that executive officer Steve Jobs, and Apple's chief financial officer, Fred Anderson, provided close consultations, in separate negotiations, with a "take it or leave it" offer.

Commenting on Apple's News Computing acquisition company founder Stephen Ewing, announcing Power Computing as a "first

classroom" Macintosh with Intel microprocessor) clone company, told Intel's chief executive officer Andy Grove was much easier to deal with than the "people at Apple."

IBM, according to Anderson, never got a Mac clone business off the ground. Users now has a license to sell existing Mac clones with Mac OS 8 until July 1998. Power Computing, similar to Motorola, will sell Mac clones until Dec. 31.

Ironically, different divisions of Motorola and IBM are the fabricator and supplier of PowerPC microprocessors used by Apple for Macintosh computers. Possible damage to Apple's relationship with both companies started to be seen, but Motorola claimed a \$50 million charge in the cost of discontinuing the StarMax line.

## Real thyself, Mac

Really sick Mac? Here are a few things that can help you nudge it back toward the land of the living.

**If your Mac won't boot,** first try holding down the Shift key. A sleep time until the Immediate Disabled message appears. (You can, don't let go.) This key usually leads to the Disking, you know that the Finder and the System file are not the fundamental cause of the problem. It is likely that an extension or control panel is the cause of your startup crash.

**If you can reach the Finder's Desktop,** by clicking, at a certain time, with the Shift key down, you should open the Extensions Manager, disable unnecessary extensions and control panels not used. Programs such as Candy & Gnomes' CoolKit, Gadget or Home's Building Workshop can save the system of time-consuming startup problems. If you don't have either of these tools, try using Extensions Manager to turn off all the items at a time, then restart every time as necessary turning on and off all the items at a time to minimize the number of restarts you have to perform.

**If you cannot reach the Finder's Desktop,** with the power off, connect an external hard drive and restart to boot a bootable Mac OS CD-ROM, if you have a supported Apple CD-ROM drive and your

Continued>Option+Shift+Delete. This will temporarily extend the system's inclination to boot from the internal drive and allow it to boot from the other drive.

Alternatively, you can press Command+Option+Shift+Delete (also the SC3110 of the drive you want to boot from).

**If the above procedure does not work, or it is not possible,** as it is a bootable floppy disk is available. You may be able to boot the system and repair the problem by using a recent Apple Disk Tools disk or an emergency startup diskette from a third-party utility.

When you reach the Finder, install any system software. (Recent system software versions include a Clean Install option. To access this feature in volume Mac OS software, press Command+Shift+E at the Easy Install/Custom Install screen.)

We have two update devices attached to your Mac with their newest drives. Check the Web pages of the companies that make the programs you use for the latest driver updates and troubleshooting info — Google for it.

For further info, a great page of key extensions for booting is at <http://www.imagine.net/bootsys.html>

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